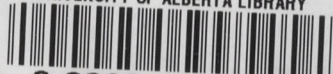


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Annual Report

on prairie farm rehabilitation
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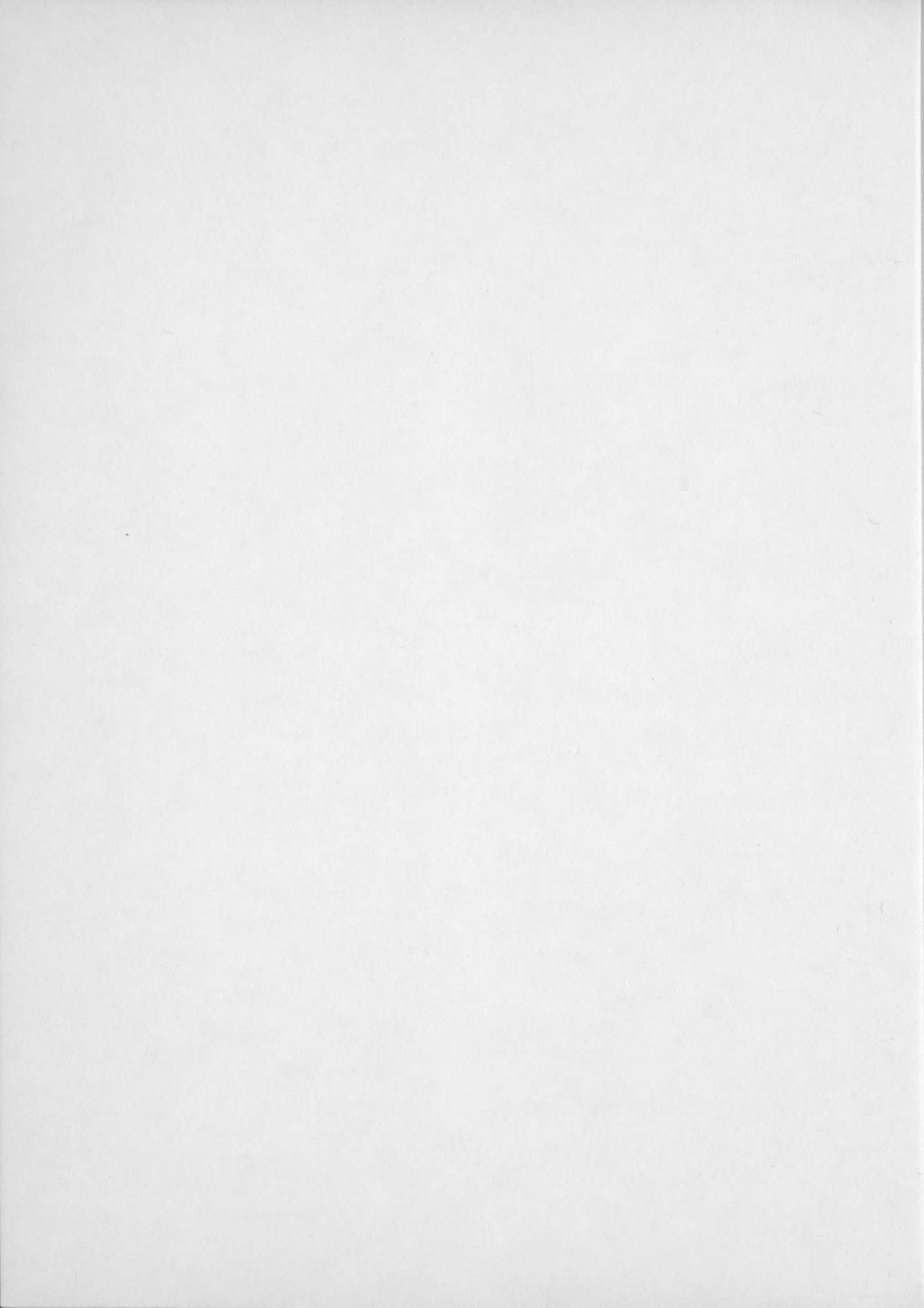
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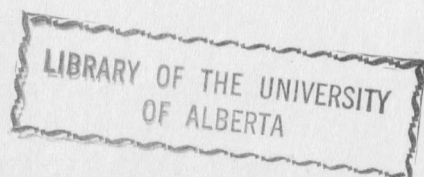


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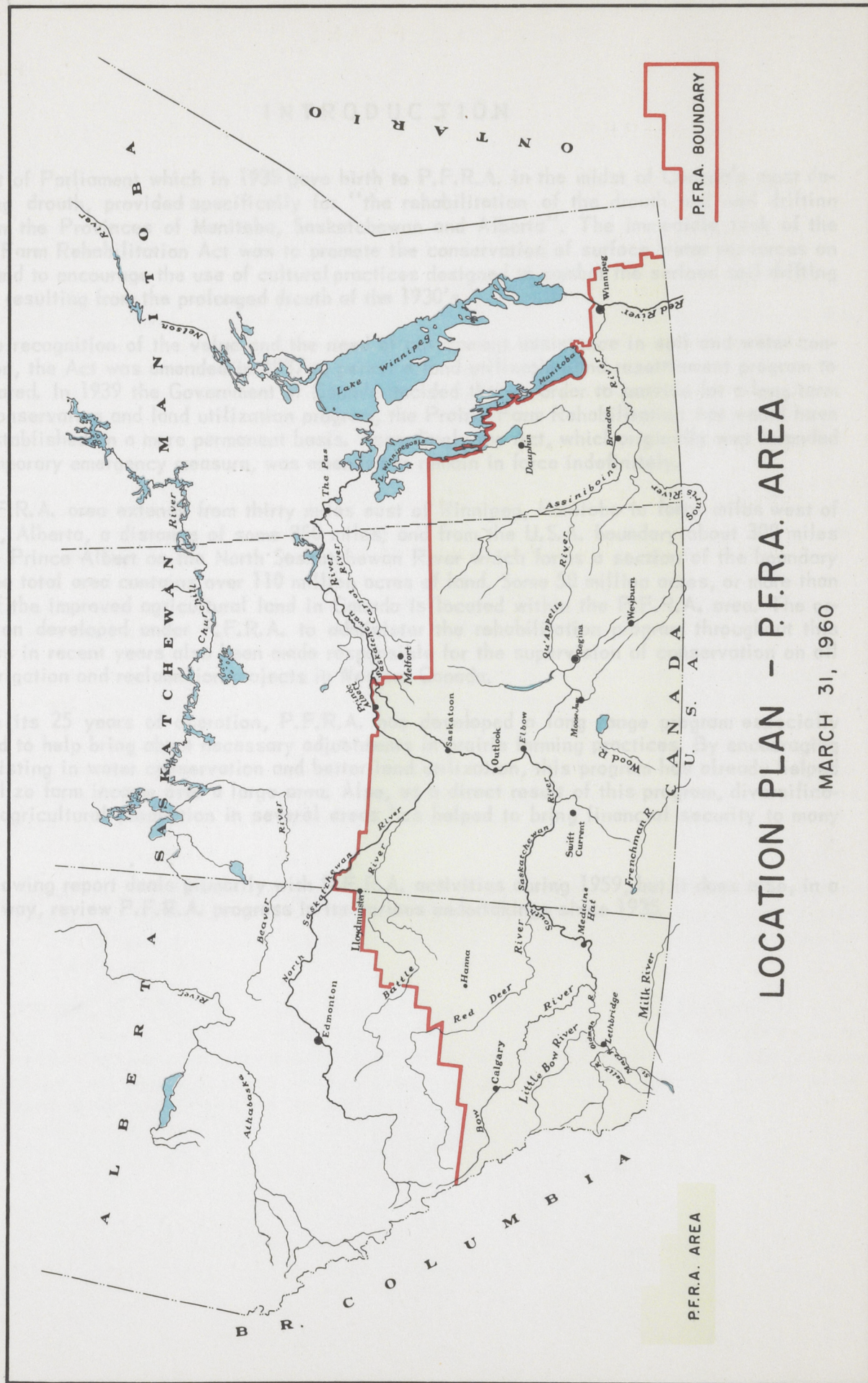
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Appendix II

Water Development Program – Number of Individual, Neighbor, Community and Large Water Development Projects and amount of financial assistance from April 1, 1932 to March 31, 1960



LOCATION PLAN - P.F.R.A. AREA

MARCH 31, 1960

INTRODUCTION

The Act of Parliament which in 1935 gave birth to P.F.R.A. in the midst of Canada's most devastating drouth, provided specifically for "the rehabilitation of the drouth and soil drifting areas in the Provinces of Manitoba, Saskatchewan and Alberta". The immediate task of the Prairie Farm Rehabilitation Act was to promote the conservation of surface water resources on farms, and to encourage the use of cultural practices designed to combat the serious soil drifting problem resulting from the prolonged drouth of the 1930's.

With the recognition of the value and the need of government assistance in soil and water conservation, the Act was amended in 1937 to permit a land utilization and resettlement program to be initiated. In 1939 the Government of Canada decided that in order to provide for a long term water conservation and land utilization program, the Prairie Farm Rehabilitation Act would have to be established on a more permanent basis. Accordingly the Act, which originally was intended as a temporary emergency measure, was amended to remain in force indefinitely.

The P.F.R.A. area extends from thirty miles east of Winnipeg, Manitoba to forty miles west of Calgary, Alberta, a distance of some 850 miles; and from the U.S.A. boundary about 300 miles north to Prince Albert on the North Saskatchewan River which forms a section of the boundary line. The total area contains over 110 million acres of land. Some 50 million acres, or more than one-half the improved agricultural land in Canada is located within the P.F.R.A. area. The organization developed under P.F.R.A. to administer the rehabilitation program throughout this area, has in recent years also been made responsible for the supervision of conservation on all major irrigation and reclamation projects in Western Canada.

Through its 25 years of operation, P.F.R.A. has developed a long range program especially designed to help bring about necessary adjustments in prairie farming practices. By encouraging and assisting in water conservation and better land utilization, this program has already helped to stabilize farm income over a large area. Also, as a direct result of this program, diversification of agricultural production in several areas has helped to bring financial security to many farmers.

The following report deals primarily with P.F.R.A. activities during 1959, but it does also, in a general way, review P.F.R.A. progress in its various undertakings since 1935.

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ADMINISTRATION and ORGANIZATION

The Prairie Farm Rehabilitation Act is administered by a Director who is responsible to the Deputy Minister of Agriculture in Ottawa. The Director's office is located at Regina, Saskatchewan, where headquarters for the administration has been established. In addition to the Director's Office the organization at Regina consists of the Engineering Services Branch, and the Agricultural Services Branch which is responsible for the activities of the Water Development Branch and the Community Pasture Branch.

The Director's Office co-ordinates the activities of the different Branches and administers the Resettlement and Rehabilitation program. The Construction, Equipment and Supply Division; Land Division, Planning and Information Division; and Administration Division are directly responsible to the Director.

The Water Development Branch supervises the development of an extensive program of farm and community water storage projects, and numerous small scale irrigation schemes.

The Community Pasture Branch undertakes the construction of new pastures and supervises the operation and maintenance of the existing Community Pastures throughout Saskatchewan and Manitoba.

The Engineering Services Branch, composed of the following Divisions – Hydrology, Soil Mechanics, Design, Air Photo Analysis and Engineering Geology, Surveys and Drainage – performs all engineering services for the investigation, design, and construction of all projects under P.F.R.A. administration.

In addition to the Head Office in Regina, there are District, Regional, and Project Offices situated throughout the Western Provinces. From the Project Offices there is usually a further breakdown to Field Offices, the number depending upon the size and type of the project being administered by the Project Office.

Since P.F.R.A. activities are closely allied to those of certain Provincial Departments, every endeavour is made to co-operate with these agencies. Similarly the P.F.R.A. maintains a close liaison with other branches and departments of the Government of Canada, such as the Economics Division and Research Branch of this department and the Water Resources Branch of the Department of Northern Affairs and National Resources.

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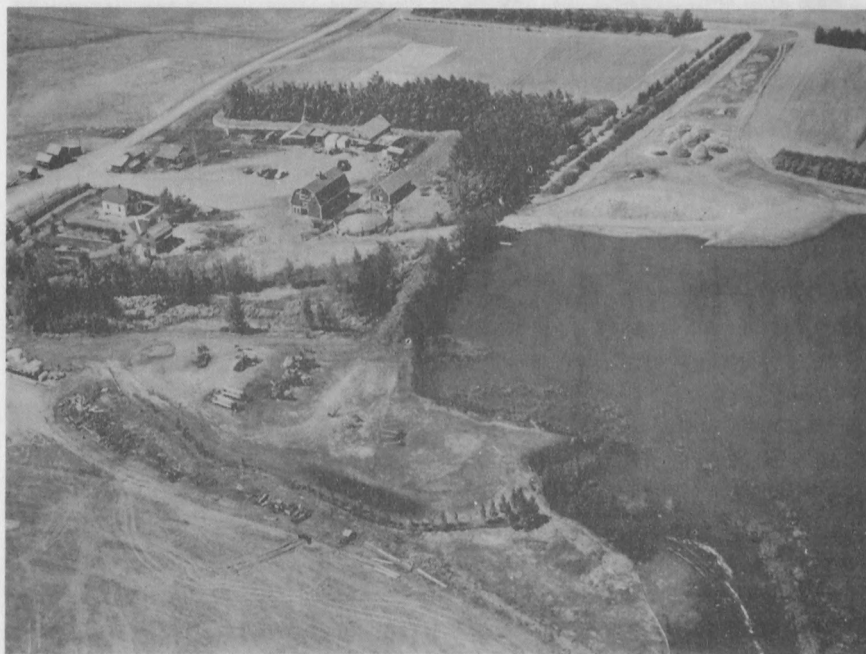
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WATER DEVELOPMENT PROGRAM

The water conservation program developed under the Prairie Farm Rehabilitation Act continued to grow during 1959-60 with water storage facilities throughout the P.F.R.A. area increasing both in number and capacity. The twenty-five per cent increase in the number of water development projects constructed during the year can be attributed to a number of factors. The drought conditions of 1957 and 1958 continued in many districts of the P.F.R.A. area in 1959. During the winter of 1958-59 light snowfall in the southern districts of all three Prairie Provinces resulted in practically no runoff in many drainage systems. With only limited rainfall during the following spring and summer seasons, many farm reservoirs became dry throughout the latter part of the year.

Another factor contributing to the increase in water storage projects was the increase in the rate of financial assistance paid on individual and neighbor projects which came into effect on April 1, 1959. This increase in rate, which approximately doubled the previous rate of assistance, has also resulted in a general increase in the size of farm water storage projects. Payments by P.F.R.A. on farm projects now represent about one-half of the total cost of construction. In addition to the above factors, the extension of



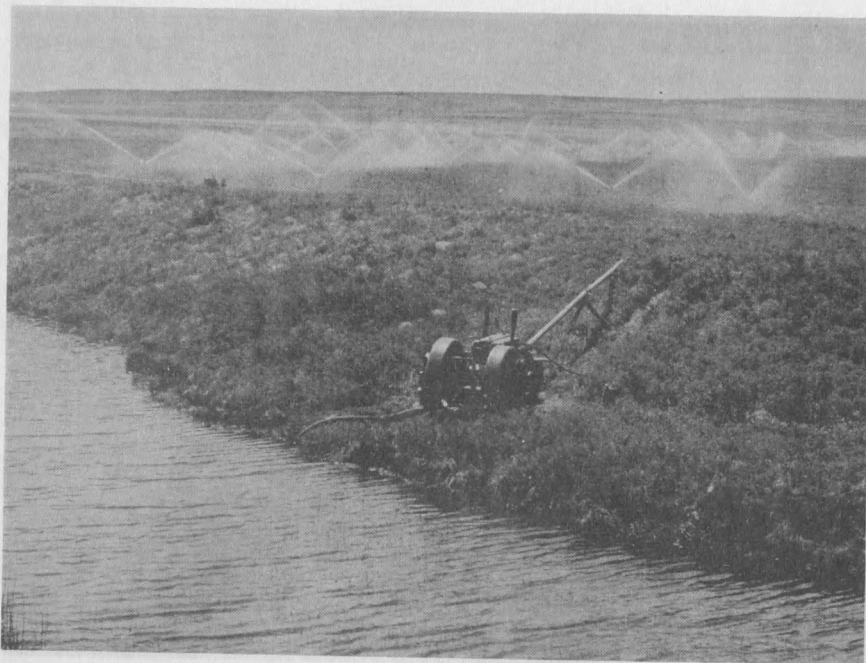
Typical stockwatering dam located in southwestern Saskatchewan ideally situated in relation to farm buildings for domestic water supply and irrigation.

rural electrification has greatly increased the water requirements on the farm and in rural communities. The provision of engineering and financial assistance by P.F.R.A. in the development of water storage facilities for surface runoff is becoming an important factor in modernizing farm homes and farming operations. The prevailing drouth conditions, the increased financial assistance by P.F.R.A., the increase in water requirements on the farm, and the availability of construction equipment, resulted in a very large program of field services and construction in 1959.

The water conservation program administered by P.F.R.A. can be divided into three categories according to the size of the project, the number of people benefitting, and the cost of construction. These include farm and community, and large water development projects.

Farm and Community Projects

Projects involving the construction of a small dam or dugout to serve a farm or neighboring farms, are classified as 'farm projects'. During 1959-60 construction was completed on 4,369 farm projects consisting of 3,974 dugouts, 259 stockwatering dams, and 136 irrigation schemes. Financial assistance amounting to \$990,355.92 was paid out by P.F.R.A.

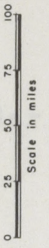
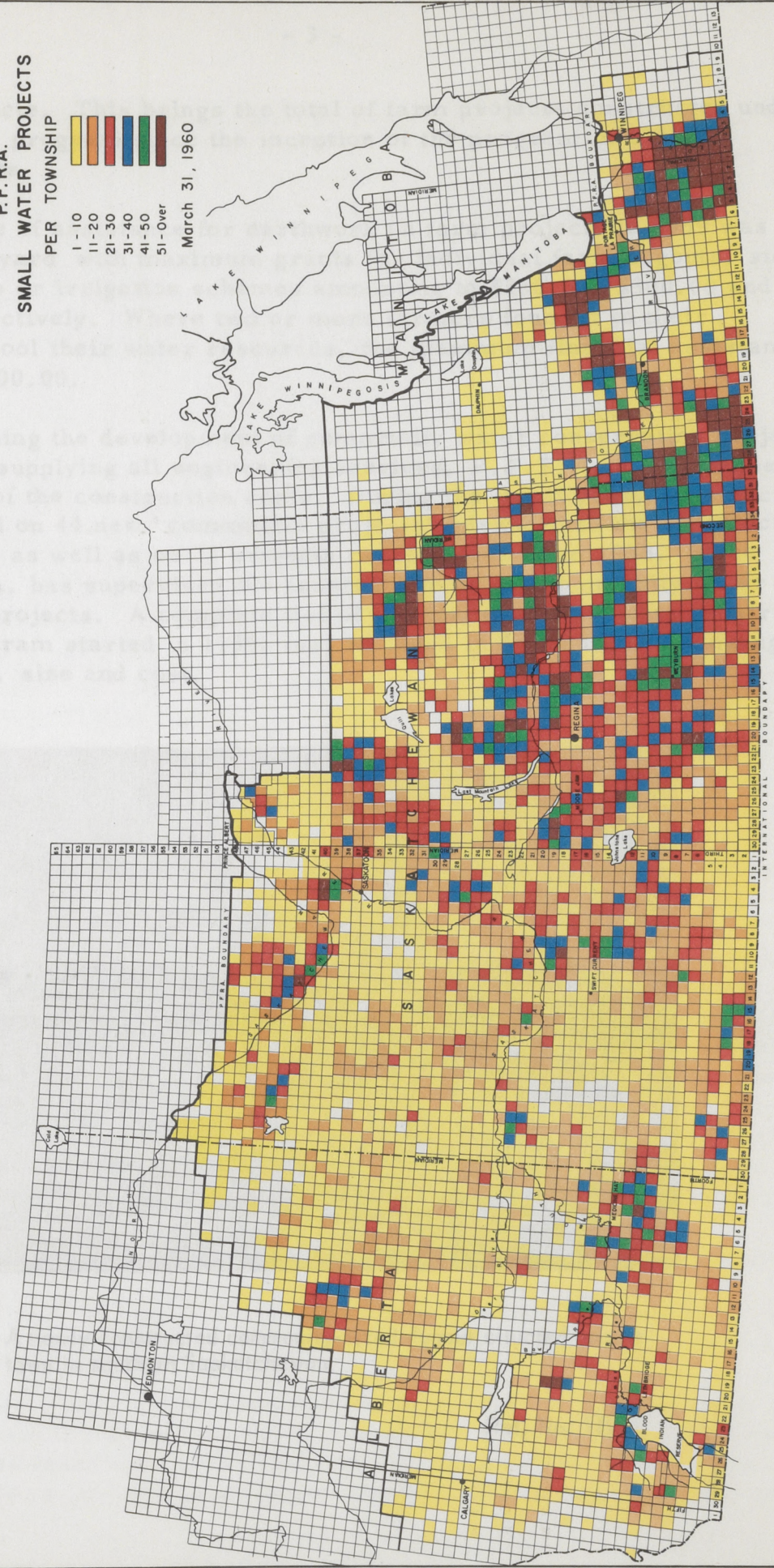


With the dependable flow of water maintained in prairie streams, the irrigation of adjacent hay lands is made possible.

P.F.R.A. SMALL WATER PROJECTS PER TOWNSHIP



March 31, 1960



on these projects. This brings the total of farm projects constructed under the P.F.R.A. program since the inception of the program in 1935, to 64,554 projects.

The rate of assistance for earthwork on farm projects in 1959 was 7¢ per cubic yard with maximum grants for individual farm dugouts, stock-watering dams or irrigation schemes amounting to \$250.00, \$300.00 and \$600.00 respectively. Where two or more farmers found it to their advantage to pool their water resources, the maximum financial assistance paid was \$1,000.00.

Concerning the development of community water conservation projects, in addition to supplying all engineering services, P.F.R.A. also assumes a larger share of the construction costs. During the fiscal year, construction was completed on 44 new 'community projects' advanced to the construction stage in 1959, as well as on 22 projects carried over from 1958. Since 1935 P.F.R.A. has supervised the construction of 748 community water development projects. A complete list of the community projects constructed since the program started in 1935, may be found in Appendix IV, showing the type, location, size and cost.



A newly constructed community-sized dugout situated near a town in southern Saskatchewan.

Ref. No. 14931

Large Water Development Projects

The construction of large water conservation projects is undertaken by agreement between the Federal Government and the provincial or local government concerned in areas where there is a special need. Over one hundred of these projects have been constructed since the program came into effect in 1935. In 1959, four of these larger projects were under construction, three of which were completed during the year. A brief description of each of these is included in this report.

Mary Jane Storage Project

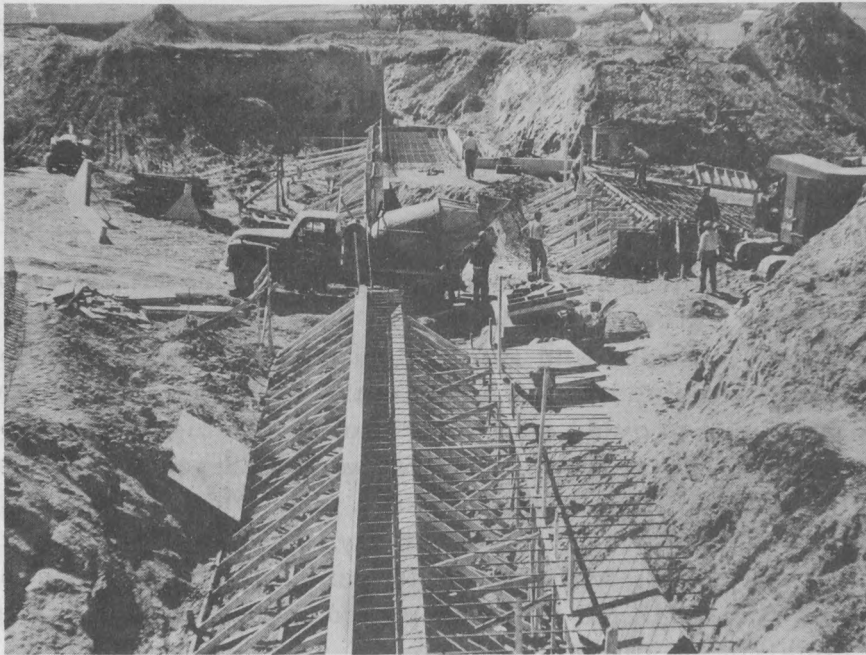
The Mary Jane water conservation project is located six miles northwest of the town of Manitou in southwestern Manitoba on the Mary Jane Creek, a tributary of the Pembina River. The earth fill dam will create a water storage reservoir which will provide water for downstream agricultural purposes and also supply water for domestic use in the surrounding rural communities. The reservoir, which has a storage capacity of 1,150 acre feet, involved the construction of a dam 46 feet high and 520 feet long. The drop inlet spillway will pass 1,440 c.f.s. while the emergency spillway will carry an additional 1,260 c.f.s. At full supply level the Mary Jane Storage reservoir will be about 1 1/2 miles long with an average width of about 500 feet. Construction began in September 1958 and received final inspection and acceptance as a finished project on January 27, 1960.

Neepawa Storage Project

A dam constructed on the Whitemud River east of the town of Neepawa, Manitoba, will create a reservoir with a capacity of 3,800 acre feet. By providing a means of balancing the flow in the Whitemud River, this project will assist in securing the livestock industry of the area. It will also provide a dependable supply of water for domestic use in rural and urban centres downstream. The earth fill dam is 1,600 feet long and 38 feet high. A concrete chute-type spillway will have a maximum discharge of 9,800 c.f.s. Work commenced on this project in May 1959 and was completed other than a small amount of trim work still to be done in the spring of 1960, by December 31, 1959.

Davidson Storage Project

The Davidson water storage project is located on a tributary of Squaw Creek about one mile southeast of the town of Davidson in central Saskatchewan. This project will provide a means of conserving runoff water for stockwatering and domestic use in an area where domestic water supply has been a serious problem. The reservoir created by the 20 foot earth fill dam will have a storage capacity of 400 acre feet and will extend upstream about 1 mile. A drop inlet spillway with a discharge capacity of 400 c.f.s. will be used to



Constructing forms and pouring concrete for cutoff and foundation on the Neepawa water project, Manitoba.

Ref. No. 51976-10



Excavating core trench along centre line of the Altawan Water Storage project during the initial stages of construction.

Ref. No. 18080

pass excess flows. Greater flows will be carried by the emergency spillway which was established by converting a former chute-type spillway into a weir. This project, construction of which began in the spring of 1959, was also completed by year end.

Altawan Dam

The Altawan Dam is located on Lodge Creek about seven miles southwest of Govenlock in the extreme southwestern part of Saskatchewan, eleven miles north of the U.S.A. border and five miles east of the Alberta boundary. This is one of the driest rangeland areas in Western Canada. The storage created by the Altawan Dam will provide water for stockwatering, irrigation, and stream-flow maintenance. The reservoir, which will hold some 5,830 acre feet of water will be about 2 1/2 miles long and 1/4 of a mile wide. The dam itself will be 55 feet high and 1,200 feet long. The chute-type spillway will have a maximum discharge of 3,900 c.f.s. while the emergency spillway will pass 5,200 c.f.s. Construction on the earth fill was completed in 1959 and it is expected the spillway will be constructed during 1960.

Technical Assistance

In addition to financial assistance provided for "farm" and "community" projects, the following free field services were supplied by the Water Development Branch in 1959-60.

	<u>Agricultural Services</u>	<u>Engineering Services</u>
<u>Dugouts</u>		
Preliminary Calls	2,336	
Final Inspections	4,783	
Miscellaneous Inspections	680	
<u>Stockwatering Dams</u>		
Preliminary Calls	258	
Final Inspections	68	339
Miscellaneous Inspections	213	994
Surveys Completed		443
Plans Prepared		288
<u>Irrigation</u>		
Preliminary Calls	305	
Final Inspections	62	132
Miscellaneous Inspections	199	757
Surveys Completed		227
Plans Prepared		260

Technical Assistance (Cont'd)

	<u>Agricultural Services</u>	<u>Engineering Services</u>
<u>Community Projects</u>		
Preliminary Calls	142	
Final Inspections	35	
Miscellaneous Inspections	131	
Projects Investigated		142
Projects Built		35
Surveys and Plans Prepared		42
Maintenance		50
	<hr/>	<hr/>
Sub Totals	9, 212	3, 709
TOTAL		<u>12, 921</u>

COMMUNITY PASTURE PROGRAM

By agreement with the Provinces of Saskatchewan and Manitoba, lands found by economic and soil surveys to be unsuitable to farming, are turned over to the Federal Government to be developed into Community Pastures. Under this arrangement the provinces concerned select the areas to be developed and obtain control of the land. This land is then leased to the Government of Canada, which agrees to construct, operate, maintain and improve community pasture facilities in the areas designated. Families located within the boundaries of proposed pasture areas are given assistance to move to better land in the same or neighboring municipalities where they may derive a better living from farming and be in a position to take advantage of the community pasture facilities. Where such lands have not been available, farmers have been moved to irrigation projects built specifically by P.F.R.A. for resettlement purposes.

Since the program was initiated in 1937, sixty-five pastures have been constructed by P.F.R.A. involving the development of some 1,886,364 acres of land. Included in this is the new 71,820 acre McCreary Pasture which was constructed in 1958-59 and will go into operation in the spring of 1960; the Cote-San Clara Pasture which just completed its first year of operation, and the Excel-Key West Pasture which was divided into two separate units during 1959. On these pastures P.F.R.A. handled 122,820 cattle, 1,408 horses and 2,920 sheep belonging to 6,331 farmers and ranchers during the current operating season, or an increase of 1,901 cattle and 496 patrons over 1958.

Detailed statistics on the community pasture program from 1937 to 1959 inclusive, may be found in Appendices V and VI of this report.

Pasture Operations

In a number of pastures in Saskatchewan, the continuing drouth conditions of the past three years, followed by a winter of limited snowfall and practically no spring runoff, created a serious pasture allocation problem, particularly in those pastures which depend upon dams and dugouts for stock-watering. Several livestock owners in areas where it was necessary to reduce the number of cattle accepted for pasturing, trucked their cattle in some cases, long distances to P.F.R.A. community pastures in both Manitoba and Saskatchewan where additional stock could be accommodated. In Saskatchewan, dry conditions continued until late in June when heavy rains improved both water supply and grazing conditions. Excellent grazing was available in Manitoba pastures throughout the season, although a sudden severe snowstorm just before roundup time in Manitoba, caused many difficulties and made it necessary to feed hay to the cattle in the Westbourne, Lakeview and Langford Pastures.



Ranchers and farmers in the Robsart area of southwestern Saskatchewan driving cattle home following fall round-up in the Govenlock Community Pasture.

Ref. No. 14112

The livestock in all pastures made satisfactory gains in weight during the season and were in exceptionally good condition in the fall.

For the second consecutive year, grasshoppers presented a very serious problem in several pastures. Aerial and ground spraying for grasshopper control was carried out in nine pastures during 1959, involving a total expenditure of \$22,323.32.

Pasture Services

Pasturage is allocated by the local Advisory Committee for each pasture on the basis of need in accordance with the established policy. The Committee also sets the maximum number of stock per patron, keeping in mind the estimated carrying capacity for good range management.

Pasture Fees

There was no change in the pasture rates which came into effect on August 1, 1958. Following is the present rate schedule for pasture services:

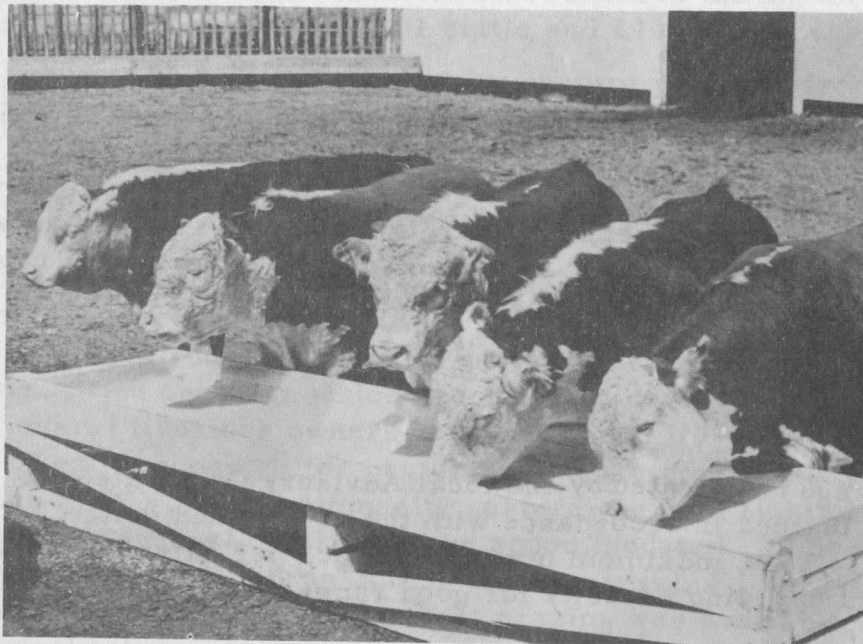
Grazing Rates

Cattle per day per head	.03
Horses per day per head	.04
Sheep per month per head	.10 (provide own herder)
Cows (breeding service)	3.00 per head
Colts of current year, sucking with dam, born before August 1st.	4.00 per head
Calves of current year, sucking with dam, born before August 1st.	3.00 per head

No charge is levied on colts and calves born in pasture after July 31st of current year to end of summer season. A minimum grazing charge of \$4.00 per head for horses, \$3.00 per head for cattle, and 30 cents per head for sheep is levied against any of these animals recorded for pasturage.

Rates for Vaccine and Other Services

Vaccines	.15 per single dose
Dehorning	.50 per head
Warble and Horn Fly Spraying	.15 per head
Mineral Supplement	.35 per head
Castration: Cattle under 6 mos.	1.00 per head
Cattle 6 mos. & over	2.00 per head
Encephalomyelitis & Special Vaccines	At cost



Young Hereford bulls being raised at the P.F.R.A. bull station, Wise Creek Community Pasture in southwestern Saskatchewan.

COMMUNITY PASTURES
PRAIRIE FARM REHABILITATION ACT
MARCH 31 - 1960

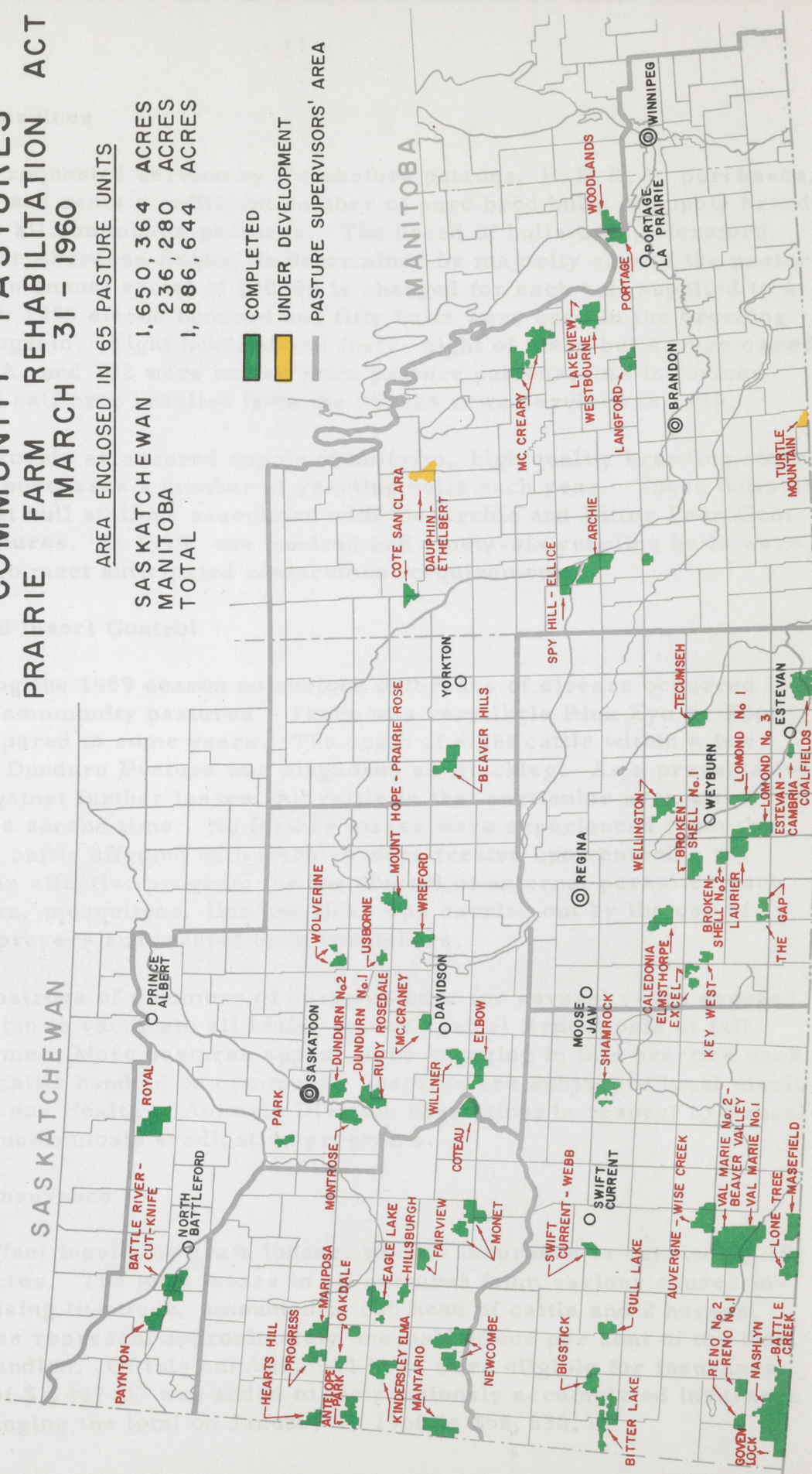
AREA ENCLOSED IN 65 PASTURE UNITS

SASKATCHEWAN	1, 650, 364	ACRES
MANITOBA	236, 280	ACRES
TOTAL	1, 886, 644	ACRES

COMPLETED

UNDER DEVELOPMENT

PASTURE SUPERVISORS' AREA



Breeding Services

As a requested service by the pasture patrons, P.F.R.A. purchases, maintains, and rents a sufficient number of pure bred bulls to supply breeding services in all community pastures. The breed of bulls used, Hereford, Shorthorn or Aberdeen Angus, is determined by majority vote of the pasture patrons. An annual rental of \$40.00 is charged for each bull supplied to a pasture. In 1959 eleven hundred and fifty bulls were used in the breeding service program. Eight hundred and forty-eight of these bulls were owned by P.F.R.A. and 302 were rented from pasture patrons. As in former years, 90% calf crop resulted from the 35,984 cows serviced in 1959.

To provide an assured supply of uniform, high quality breeding stock, P.F.R.A. purchases a number of yearling bulls each year. These bulls are developed at bull stations associated with the Archie and Bitter Lake Community Pastures. In 1959, one hundred and ninety-six yearling bulls were purchased to meet anticipated replacement requirements.

Disease and Insect Control

During the 1959 season no serious outbreaks of disease occurred in P.F.R.A. community pastures. There was very little Pink Eye or Foot Rot as compared to some years. The death of eight cattle within a few days in the Dundurn Pasture was diagnosed as Blackleg. As a preventative measure against further losses, all cattle in that particular area were vaccinated a second time. No further losses were experienced from this cause. All cattle affected with warbles were treated upon entering the pasture. An effective program for the control of external parasites such as horn flies, mosquitoes, lice and ticks was carried out by the use of pressure sprayers and treated back scratchers.

The patrons of a number of pastures have for several years engaged a veterinarian to vaccinate all heifer calves against Brucellosis at fall round-up time. More pastures appear to be engaging in this practice each year. All cattle handled on community pastures are subject to local municipal bylaws and Health of Animals Division regulations in respect to Brucellosis and Tuberculosis eradication programs.

Livestock Insurance

To offset inevitable death losses, mutual insurance is carried by 35 of the pastures. The total losses in all pastures from various causes including missing livestock, amounted to 665 head of cattle and 2 horses. These losses represent approximately one-half of one per cent of the total livestock handled. Of this number, 351 head were eligible for insurance. A surplus of \$1,487.37 was added to the previously accumulated insurance reserve bringing the total on January 1, 1960 to \$58,636.15.

Haying

Each year a large amount of hay is harvested in community pastures. This hay is used to feed the pasture bulls and headquarters stock. During 1959 a total of 4,070 tons of hay and greenfeed was harvested by the pasture managers and in a few cases by adjacent farmers who put up a small percentage of this hay on a share basis.

Regrassing

Under the regrassing program carried on in community pastures, 2,781 acres were seeded to grass in 16 operating units in 1959. This was made up of 1,954 acres of crested wheat grass, 542 acres of brome and crested wheat grass, and 288 acres of mixed grasses. No grass seed was harvested on community pastures during the year.

Fires and Fire Protection

No buildings were destroyed by fire in 1959-60. All pasture buildings are equipped with approved fire extinguishers. Regular inspections assure that proper fire prevention measures are observed and that preventative equipment is maintained ready for immediate use.



Herbicidal spraying of regrowth along fireguards in the Beaver Hills Community Pasture.

Several small grass fires occurred in the pastures during the year. These were caused mainly by lightning. To assist in the control of fires all pastures are protected by a network of fireguards which are maintained by two motorized graders. Some 757 miles of fireguards were bladed by these units in 1959. Many additional miles were maintained either by contract or by pasture managers using pasture equipment.

Pasture Construction

To maintain and extend pasture facilities, eight construction crews and three water development crews were employed by P.F.R.A. in 1959-60. In addition to the work in the operating pastures, initial construction on the 71,820 acre McCreary Pasture was completed and a start was made on the fencing of the Turtle Mountain Pasture in southern Manitoba. The water development crews handled 70 maintenance jobs, erected 32 windmills, and set 125 new watering troughs. With the use of privately owned equipment, 3 dams, 26 dugouts and 15 springs were constructed and developed. A total of 38 new wells were dug and equipped with pumping equipment.

Following is a summary of pasture construction activities for the 1959-60 season:

Particulars	Projects completed in 1959	Repair work completed in 1959	Total to March 31, 1960
Fencing (miles)	175 1/4	141 1/2	4,506 1/4
Corrals, No. of	2	8-1 Dsmltd.	162
Pasture Managers' Dwellings	2	3	58
Riders' Cabins	1		37
Barns	2		59
Garages	2		59
Bull Sheds	5	4	54
Others (Granaries, Oil Sheds, Chicken Houses, Pump Houses)	6	6	170

Water Development

Windmills, No. of	32	16	403
Wells, No. of	38	54	350
Springs, No. of	16		183
Dams, No. of	21	1	271
Dugouts, No. of	41	10	647

Total number of acres enclosed as at March 31, 1959 1,811,984

Total number of acres enclosed in 1959 construction season 74,380

Total number of acres enclosed as at March 31, 1960 1,886,364

Pasture Improvement

A special pasture improvement section of the community pasture branch supervises and directs the pasture improvement operations in both the prairie and parkland pastures. This section plans and carries out an investigational and work program designed to increase the usefulness of the pasture areas. To determine the effectiveness of the various new and improved operations, the pasture improvement section works in co-operation with the Federal Research Stations which advise on new methods and procedures and carry out a program of production measurements.

In the open plains area regrassing, stockwatering development, and the extension of pasture irrigation projects were the main types of work undertaken by the Pasture Improvement section during 1959. Eleven thousand and thirty acres were regrassed, 14 dugouts and 9 dams were constructed and irrigation development work was carried out on 8 pasture irrigation projects in southwestern Saskatchewan. These included the flood irrigation scheme in the Govenlock Pasture; the Pump-Gravity, Sprinkler and Flood schemes in the Bitter Lake Pasture; Lonesome Lake and Lewis Flats Flood schemes in Reno No. 1 Pasture; Dixon and Dido Sloughs in the Battle Creek Pasture; the Dry Lake project in Beaver Valley Pasture; and the irrigated pasture area associated with the West Val Marie Irrigation Project in the Val Marie Pasture. In



Ridging flood irrigation land, Govenlock Community Pasture in experiment to determine the value of such techniques for improved production on poorly drained soils.

addition, surveys were completed on a proposed flood irrigation area extension to the Battle Creek Pasture, on the river flats of the Lodge and Middle Creeks in the Govenlock Pasture, on a proposed flood irrigation area in the Auvergne-Wise Creek Pasture and on a possible flood irrigation area on the Frenchman River Flats in the Val Marie Pasture.

Moisture conditions during the year were variable in the open plains. Spring drought conditions gave way to heavy rainfall in the early summer with dry weather again being experienced during the early fall. Considering the limited rainfall received and the small amount of spring flooding, yields on the various irrigation projects which have been developed in the open plains pastures were high, particularly on those areas being developed for tame grass production.

In previous years various soil mechanical treatments have been undertaken including tooth pitting, disc pitting, contour furrowing, and sub-soiling. Measurements to determine the effectiveness of these treatments were continued by the Pasture Division of the Swift Current Experimental Farm.

In the parkland area, community pasture work carried on by the Pasture Improvement section, was mainly concentrated on bush spraying operations for regrowth along fence lines and in previously cleared areas. Spray application was by turbine sprayers in the Beaver Hills and Royal Pastures, by high pressure sprayers in the Woodlands and Portage Pastures, and by aircraft in the Cote-San Clara and McCreary Pastures. Ground spraying was carried out on about 4,500 acres with aerial spraying covering around 2,000 acres. Further spraying by air was curtailed by adverse weather conditions.

Land clearing by mechanical methods was limited to rotary cutting as a fence line maintenance operation, except in the Langford Pasture where clearing by rotary cutters was continued in the valley area where a high water table exists. Mechanical methods for clearing new areas have been discontinued except in fireguarding in the Lakeview Pasture. Large acreages are gradually being cleared in the Royal, Portage, Payton, Battle River-Cut Knife, and Park Pasture by means of the controlled burning of knocked down and standing growth. This is made possible by a system of fireguards which were completed in 1958. Controlled burning as a land clearing operation was particularly successful in the Beaver Hills Pasture during the 1959 season.

The mechanical clearing operations completed in 1957 and the follow-up operations of burning and herbicidal spraying, have made large areas available for regrassing at a small cost per acre as compared to the conventional methods of land clearing. Regrassing operations in parkland pastures showing a trend to high grazing demand, are being planned on a long-term basis.

In 1959 regrassing operations carried out by the Pasture Improvement section in the parkland pastures were confined to the seeding of grass on about 110 acres associated with drainage projects on the Beaver Hills Pasture. With

the exception of a 300 acre area being developed for forage crop production, this completed the regrassing program for the Beaver Hills Community Pasture.

As a result of the pasture improvement program, the productiveness of P.F.R.A. community pastures, particularly in the parkland area, has been materially increased, and pasture conditions in general are continually being improved.

REHABILITATION and RESETTLEMENT

Under the terms of the Prairie Farm Rehabilitation Act, provision is made for the rehabilitation and resettlement of farmers from areas of the prairies where drouth conditions have rendered farming a hazardous and frequently uneconomic pursuit.

Where it has been possible to achieve satisfactory rehabilitation without the necessity of moving farmers from their present locations, this has been done through the P.F.R.A. water development and community pasture programs. In other instances it has been necessary to move settlers to other areas where they can be assured of an adequate living from farming.

In this connection irrigation has played a major role both in stabilizing production on farms in the drouth area, and in providing improved land on which farmers can become permanently rehabilitated. In particular, the Val Marie, West Val Marie, Consul, Eastend, Maple Creek and Swift Current projects in the low rainfall area of southwestern Saskatchewan, are typical of projects which P.F.R.A. has built and continues to operate specifically for rehabilitation and resettlement purposes. By the construction of a series of storage reservoirs on rivers and streams originating in the Cypress Hills, water supplies from melting snow are made available for irrigation. The irrigated lands associated with these projects are divided into 40-60 acre plots and made available to farmers in surrounding areas for the production of livestock feed. In 1959 some 560 farmers produced over 40,000 tons of forage and almost 46,000 bushels of feed grain on the above community irrigation projects supervised by P.F.R.A. In addition to this, P.F.R.A. has provided engineering advice and financial assistance to thousands of smaller individual, neighbor and community irrigation schemes throughout the drouth area for the purpose of stabilizing feed supply.

Where it has not been possible to effect the rehabilitation of farmers on the land they are operating, special arrangements have been made whereby farmers may receive assistance to move to irrigated lands in southern Alberta which have been developed by the Federal Government for resettlement purposes.

Following is an account of the progress and development on the irrigation projects in Saskatchewan which were built especially for rehabilitation and resettlement purposes and which the P.F.R.A. on behalf of Canada continues to operate.

Consul Irrigation Project

The Consul area of Saskatchewan is a semi-arid region slightly drier than other tracts of range land in southwestern Saskatchewan. The area is ideal for cattle raising when a reliable source of winter feed is available. This creates

a constant demand for irrigation land. Water is supplied to land in the Consul district from the Cypress Storage Reservoir by means of weir-type diversions in Battle Creek which supply the McKinnon, Richardson and Nashlyn Canals.

The Consul project has a potential irrigable area of approximately 3,570 acres. In 1959, two thousand nine hundred and forty acres of land were operated by 50 plowholders, 440 acres were under development and the remaining 190 acres which are fringes of good quality land, are to be developed by the plowholders. During the growing season 5.3 inches of precipitation were recorded in the Consul area. This was supplemented by the use of 4,000 acre feet of water to irrigate 2,340 acres of land with two applications of water, and 450 acres with one application. The 4,280 tons of feed produced on the project in 1959 was sufficient to supplement the winter feed requirements of about 4,000 head of cattle and 2,000 sheep owned by the farmers on the project. Since 1952 there has been an increase of about 2,800 in the number of cattle owned by farmers making use of the irrigated land on the Consul project.

Drainage work continued during the year and several surface drains were cleaned and improved during the construction season. The tile drain installed at Consul in 1955 has lowered water tables in the seepage area, and the land which was sown to oats in 1959 will be ready for forage crop production in 1960. In addition to the maintenance and improvement work, a P.F.R.A. crew located on the project, also handled the distribution of water to individual irrigators.

Eastend Irrigation Project

Located on the Frenchman River which flows southeast out of the Cypress Hills, the Eastend Irrigation Project extends for fifteen miles southeast of the town of Eastend, Saskatchewan. Irrigation water for this area is supplied from the Eastend Reservoir and in dry periods this storage is supplemented from the Cypress Storage Reservoir in the Cypress Hills at the headwaters of the Frenchman River. The project has a potential irrigable area of approximately 3,300 acres. In 1959, fifty plowholders operated 2,740 acres; 2,600 of which were in forage crops, 100 acres in coarse grain crops, and 40 acres in summerfallow. During the growing season only 4.8 inches of precipitation were recorded in the project area. To supplement this, one application of water was used on 980 acres, while 1,710 acres received two applications. During the 1959 season the total water consumption on the project was 4,500 acre feet. Feed production amounted to 3,100 tons which was sufficient to meet the feed requirements of 3,600 head of cattle and 2,000 sheep owned by the plowholders. There are now, 1,520 more acres in forage and 2,100 more cattle on the project than there were in 1953. This increase in livestock and forage production combined with dry land farming, has created more efficient farm units.

During the 1959 season P.F.R.A. completed the development of a new area known as the Uglum Extension, which consists of 450 acres of irrigable land. Three hundred acres of this new area were seeded to forage crops and irrigated by P.F.R.A. This land will be made available to local livestock producers in 1960.

A small P.F.R.A. crew was employed for repairing irrigation structures, distributing water to individual farmers, and doing general maintenance work on the project.

Land levelling, improved surface drainage and careful application of water have prevented the problem areas from deteriorating and resulted in improved conditions throughout the project.

Val Marie Irrigation Project

The Val Marie Project is located in the Frenchman River Valley downstream from Eastend and extends for several miles northwest and five miles southeast of the village of Val Marie. Water for irrigation is obtained from the Cypress Hills via the Frenchman River with local storage in the Val Marie Reservoir upstream from the project area.

Of the 4,680 acres of irrigable land on the Val Marie Project, 75 farmers cropped 4,180 acres in 1959, producing 5,150 tons of forage and 3,000 bushels of oats for feed. As a result of severe winter damage to alfalfa crops, the average yield dropped from about 2 tons per acre to 1.4 tons as 65% of the project produced only one cutting of hay. This was sufficient feed to carry the basic herds of the plot operators. Since 1950 the cattle production on this project has doubled to 5,800 in 1959. During 1959 farmers on the project irrigated 580 acres once, 2,485 acres twice, and 1,030 three times. Five hundred and eighty-five acres were under development and received no irrigation. The precipitation during the 1959 growing season amounted to 5.5 inches.

Maintenance work in 1959 included the installation of new check and turnout structures on both the main and lateral canals, the construction of two bridges and the cleaning of all ditches in the south block. As part of the project improvement program, 130 acres were scraper levelled and 175 acres were prepared for levelling in 1960. During the year the project maintenance crew also supervised the distribution of irrigation water to individual farmers.

West Val Marie Irrigation Project

Located in the Frenchman River Valley fifteen miles northwest of the village of Val Marie, the West Val Marie project, which is upstream from the Val Marie reservoir, contains 3,500 acres of potentially irrigable land. As on the Val Marie and Eastend projects, irrigation water is obtained from the Cypress Storage Reservoir via the Frenchman River. Local storage is provided by the West Val

Marie Reservoir from where water is distributed to the project both by gravity and by pumping systems. In 1959, the 52 farmers served by the project, operated 2,730 acres of irrigable land, producing 3,730 tons of feed. The decrease in production from 2.2 tons per acre in 1958 to 1.5 tons in 1959, was caused mainly by the shorter irrigation season as it was necessary to drain the reservoir in July to construct a new concrete spillway. Farmers were able to irrigate 1,680 acres of land twice, while 750 acres received only one irrigation. Precipitation during the growing season was 5.5 inches.

The West Val Marie project produced enough supplemental feed to carry the 3,500 cattle owned by the plowholders. In addition to the feed produced, 1,100 cattle winter-graze the project. These cattle are fed along the sheltered fringe of the river if weather conditions become severe. Besides the irrigated forage crop area, 800 acres of irrigated crested wheat grass are fenced out for pasture purposes as part of the Val Marie Community Pasture.

A considerable amount of development and maintenance was carried out on the project in 1959. The West Val Marie dam was improved and a new concrete spillway was constructed. The capacity of the reservoir will be increased from 2,200 to 4,100 acre feet of water. Additional maintenance work was done on the canals and roads by a P.F.R.A. project crew using project machines and equipment.

Maple Creek Irrigation Project

In the rough hilly topography of the Maple Creek district of southwestern Saskatchewan, conditions are more favorable for raising livestock than producing cereal crops. The strong Chinook winds peculiar to that area cause high evaporation on the generally light textured soils, and this, combined with low annual precipitation, makes irrigation a vital factor in maintaining the agricultural economy of the region.

The Maple Creek project has two main irrigation districts operated by P.F.R.A., and several districts where farmers operate their own land under a spring flood license. The Maple Creek Flats, west of the town, contain 3,500 acres of irrigable land, while the "V" Flats, twenty miles north of Maple Creek, contain about 1,900 acres. There are some 3,750 acres of private flood land operated by the farmers themselves with water being obtained through P.F.R.A. storage reservoirs.

The late cool spring of 1959 in the Maple Creek area, produced a low spring runoff. There was sufficient water in the storage reservoirs, however, for farmers and ranchers to irrigate 1,800 acres of land once, and 3,700 acres twice, as well as for the flood irrigation on private lands. During the year 138 farmers and ranchers produced 14,800 tons of forage and 21,000 bushels of coarse grain on the project areas. Production averaged 2 tons per acre on all the hay land but averaged over 3 tons per acre on irrigated land that had been improved by scraper levelling.



Farmer windrowing Alfalfa in preparation for baling on field of irrigated land, Maple Creek Irrigation Project.

Ref. No. 20016

Development work on the Maple Creek project has included the scraper levelling of 1,000 acres of irrigable land in the last four years. This levelling has greatly improved the efficiency of irrigation, provided better drainage, and produced increased yields of forage crops. As a result of this increasing production on the Maple Creek project, the number of livestock in the area has doubled since 1953, and there has been no feed shortage since 1949. Repair and maintenance work on the project in 1959 was carried out by a P.F.R.A. crew using project supplies and equipment.

Swift Current Irrigation Projects

In the Swift Current, Waldeck, Rush Lake and Herbert districts northeast of the Cypress Hills region, approximately 20,000 acres of potentially irrigable land, of which 14,500 acres are presently undergoing development, are supplied with irrigation water from the Duncairn Reservoir southwest of Swift Current and the Highfield reservoir near Rush Lake. The Rush Lake district is the only district operated by P.F.R.A. Other districts are supplied with water by P.F.R.A. but are operated by private individuals, the Research Station, or the Provincial Conservation and Development Branch.

The North Rush Lake area, which has approximately 4,700 acres of developed irrigable land, was operated by 152 farmers in 1959 and produced 6,933 tons of forage and 5,984 bushels of coarse grain. Some 4,400 cattle and 335 sheep are owned by the farmers using this part of the Rush Lake project to produce the feed necessary to carry their livestock throughout the winter.

In the South Rush Lake project there are approximately 1,700 acres of irrigable land which are irrigated by spring flood from the main canal. During 1959, forty-six farmers produced 1,777 tons of forage and 3,330 bushels of coarse grain as supplementary feed for their 1,400 cattle and 325 sheep. An additional 535 acres were seeded to forage crops in 1959 making a total of 1,300 acres seeded to forage crops in the South Rush Lake area since 1956.

Development work on the North Rush Lake project in 1959 consisted of breaking 85 acres of land, scraper levelling of 75 acres in preparation for reseeding to forage crops, and seeding 475 acres of land which were prepared previously. Drainage on the project was improved by construction of 1 1/2 miles of new drainage ditch and the renovation of 7 1/2 miles of existing drain. New structures, bridges and culverts were installed by the P.F.R.A. project crew to improve and increase the irrigable acreage in both the North and South portion of the Rush Lake Project.

Bow River Resettlement Project

✓ To provide land suitable for resettlement of farmers from drouth areas on the prairies, the Government of Canada in 1951 purchased the Bow River Irrigation Project northwest of Medicine Hat in Alberta, and set aside 27,000 acres in the Hays District of the project specifically for this purpose. Actual settlement began in 1952. There are now 162 farm families settled in the district. Three of the families moved to the project from Saskatchewan in 1959. This now completes the resettlement program on the Bow River Project and no further movement of settlers to the Hays District is anticipated.


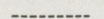
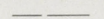

During 1959 the main point of interest was a change in land policy whereby provision was made for the original 120 acres of irrigable land per farm unit to be increased by 30 or 40 acres. The purpose of the revision was to help speed the rehabilitation of settlers in the district. In addition, special loans were made available in 1959 to assist farmers in the purchase of fencing material, building materials for the family dwelling, and breeding stock. It is anticipated that these new policies will provide the extra acreage needed to institute more effective weed control measures through summerfallow, encourage livestock production, and improve housing accomodation on farms throughout the project area.

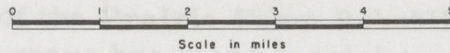
BOW RIVER PROJECT

RESETTLEMENT-HAYS IRRIGATION DISTRICT

MARCH 31, 1960

LEGEND

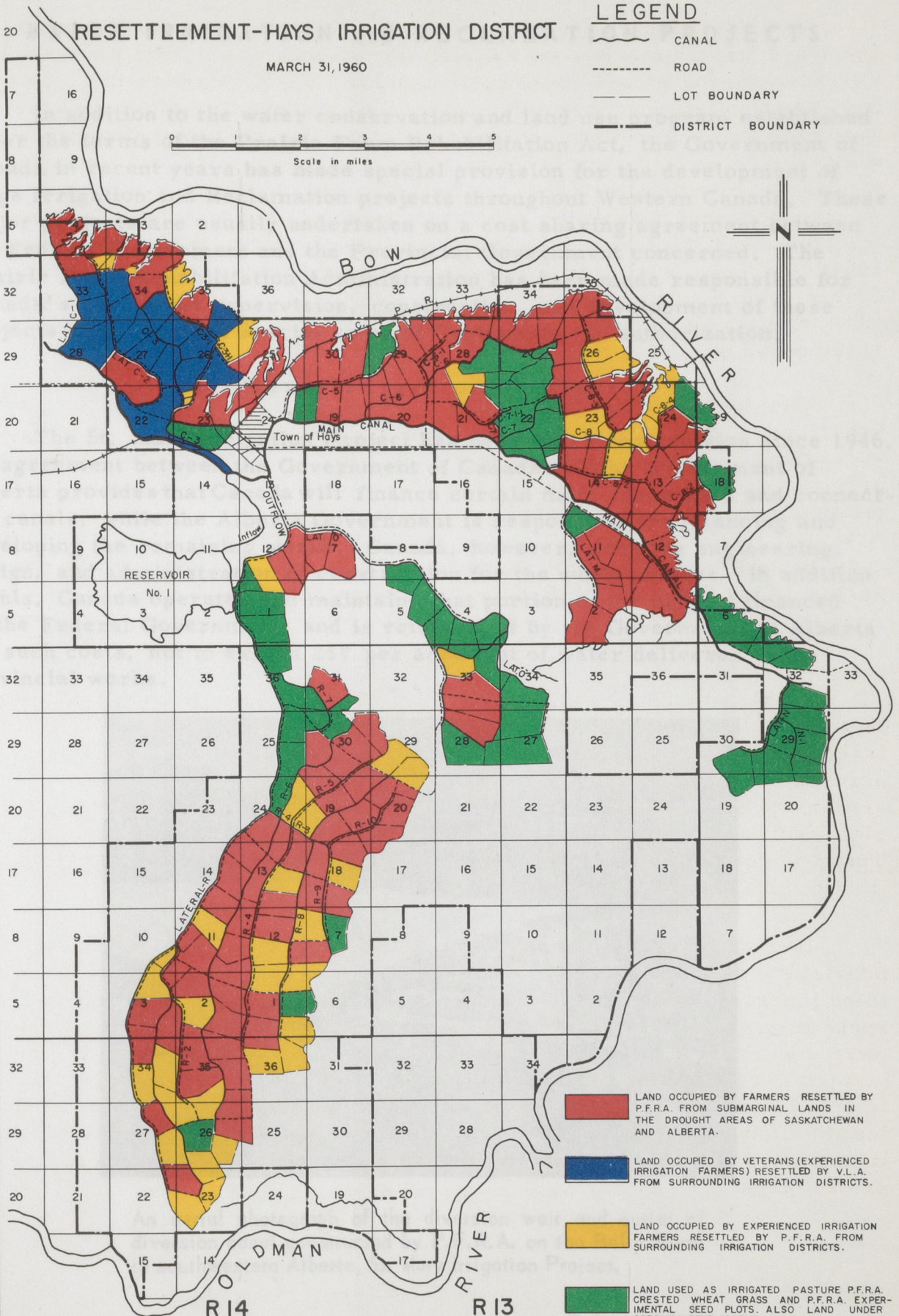
-  CANAL
-  ROAD
-  LOT BOUNDARY
-  DISTRICT BOUNDARY







T 14

T 13

T 12



-  LAND OCCUPIED BY FARMERS RESETTLED BY P.F.R.A. FROM SUBMARGINAL LANDS IN THE DROUGHT AREAS OF SASKATCHEWAN AND ALBERTA.
-  LAND OCCUPIED BY VETERANS (EXPERIENCED IRRIGATION FARMERS) RESETTLED BY V.L.A. FROM SURROUNDING IRRIGATION DISTRICTS.
-  LAND OCCUPIED BY EXPERIENCED IRRIGATION FARMERS RESETTLED BY P.F.R.A. FROM SURROUNDING IRRIGATION DISTRICTS.
-  LAND USED AS IRRIGATED PASTURE P.F.R.A. CRESTED WHEAT GRASS AND P.F.R.A. EXPERIMENTAL SEED PLOTS. ALSO LAND UNDER SPECIAL DEVELOPMENT

BOW RIVER PROJECT

LEGEND

PROJECT BOUNDARY
DISTRICT BOUNDARY
LOT BOUNDARY
ROAD
CANAL
WATER

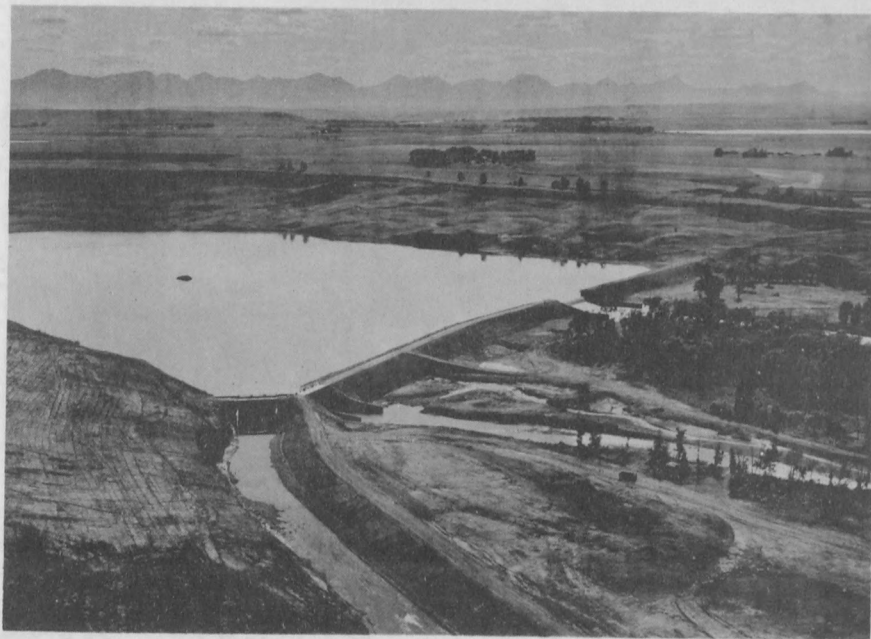


MAJOR IRRIGATION and RECLAMATION PROJECTS

In addition to the water conservation and land use program established under the terms of the Prairie Farm Rehabilitation Act, the Government of Canada in recent years has made special provision for the development of large Irrigation and Reclamation projects throughout Western Canada. These major projects are usually undertaken on a cost sharing agreement between the Federal Government and the Provincial Government concerned. The Prairie Farm Rehabilitation Administration has been made responsible for Canada's part in the supervision, construction, and development of these projects which require special votes of Parliament for authorization.

St. Mary Irrigation Project

The St. Mary Irrigation Project has been under construction since 1946. An agreement between the Government of Canada and the Government of Alberta provides that Canada will finance certain main reservoirs and connecting canals, while the Alberta Government is responsible for financing and developing the remaining works. Canada, however, does the engineering, design, and administration of construction for the whole project. In addition to this, Canada operates and maintains that portion of the project financed by the Federal Government, and is reimbursed by the Government of Alberta for such costs, not to exceed 25¢ per acre foot of water delivered to the provincial works.



An aerial photograph of the diversion weir and outlet of diversion canal constructed by P.F.R.A. on the Belly River in southwestern Alberta, St. Mary Irrigation Project.

When completed, the St. Mary Project is expected to contain nearly 500,000 acres of irrigated land, using all available water from the Belly and Waterton rivers, along with Canada's share of the St. Mary river. The project lends itself to stage construction which is an important asset because it takes time for a dry region to adjust itself agriculturally and economically to the addition of large acreages of irrigated land. It is expected that another six or eight years will pass before the final stage of construction is completed. Up to the present time works have been completed to serve 304,000 acres of land, of which 120,000 acres were previously irrigated with a limited water supply.

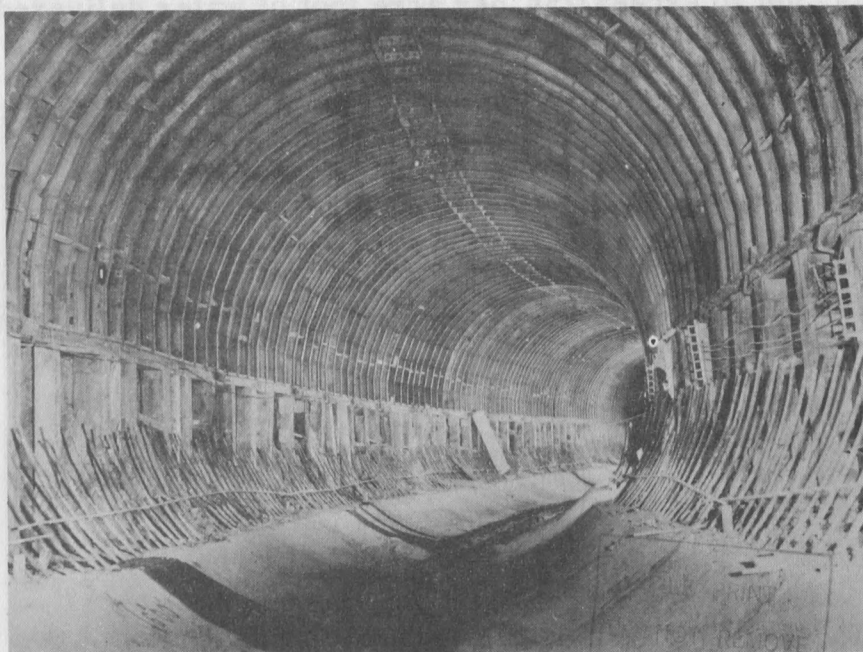
Capital funds expended by the two Governments to March 31, 1960 are approximately:-

Government of Canada (P.F.R.A.)	\$22,059,000.00
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Government of Alberta	18,214,000.00
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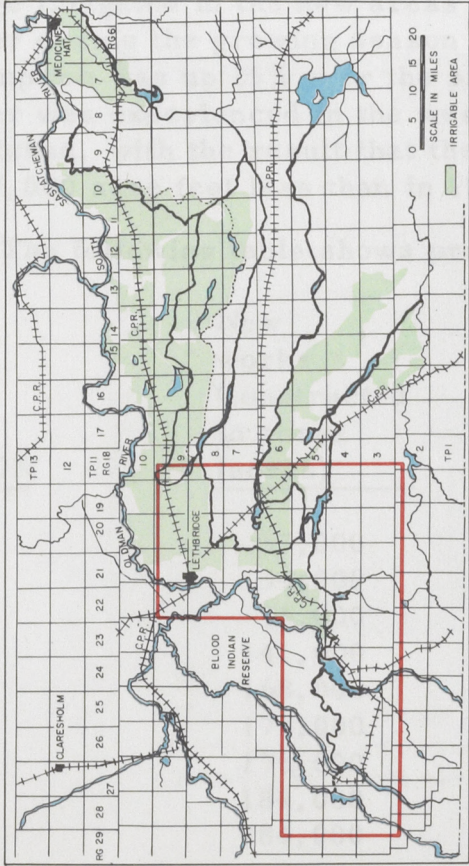
Investigations and Construction

In 1959 the engineering staff was engaged in further design and investigation of the Waterton Dam and appurtenant structures, as well as for the canal and structures required for diversion from the Waterton Reservoir to

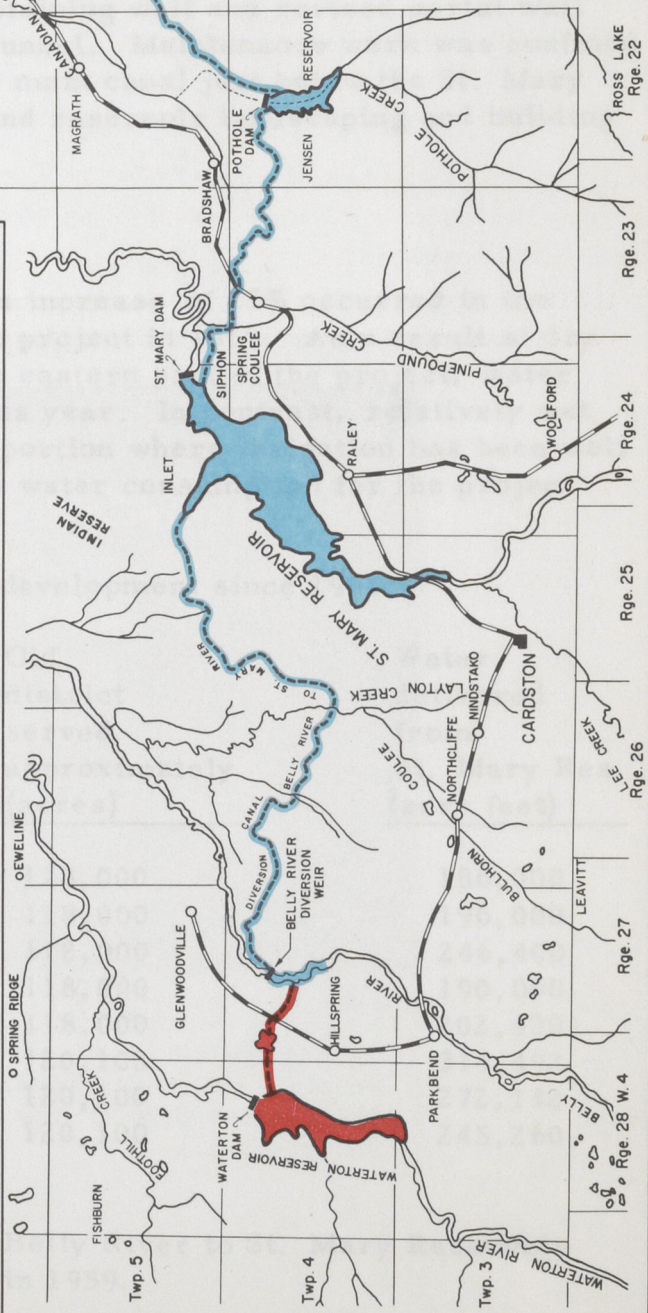


Interior view of river diversion tunnel under construction on the Waterton water storage and diversion project in southwestern Alberta.

Ref. No. 19512



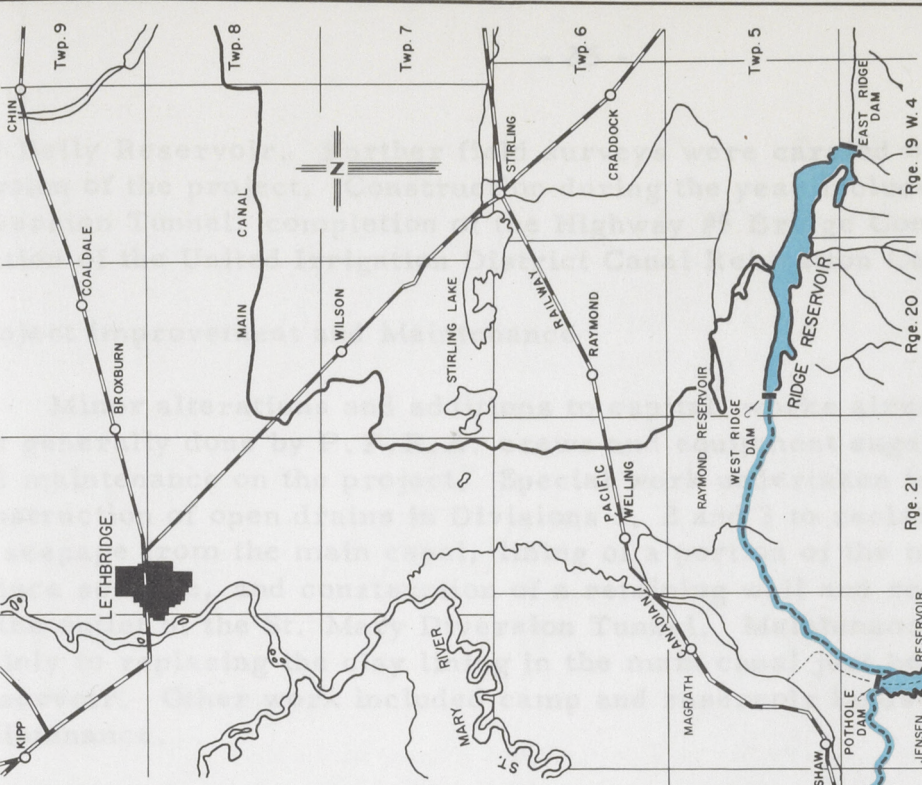
**ST. MARY IRRIGATION PROJECT
GENERAL PLAN**

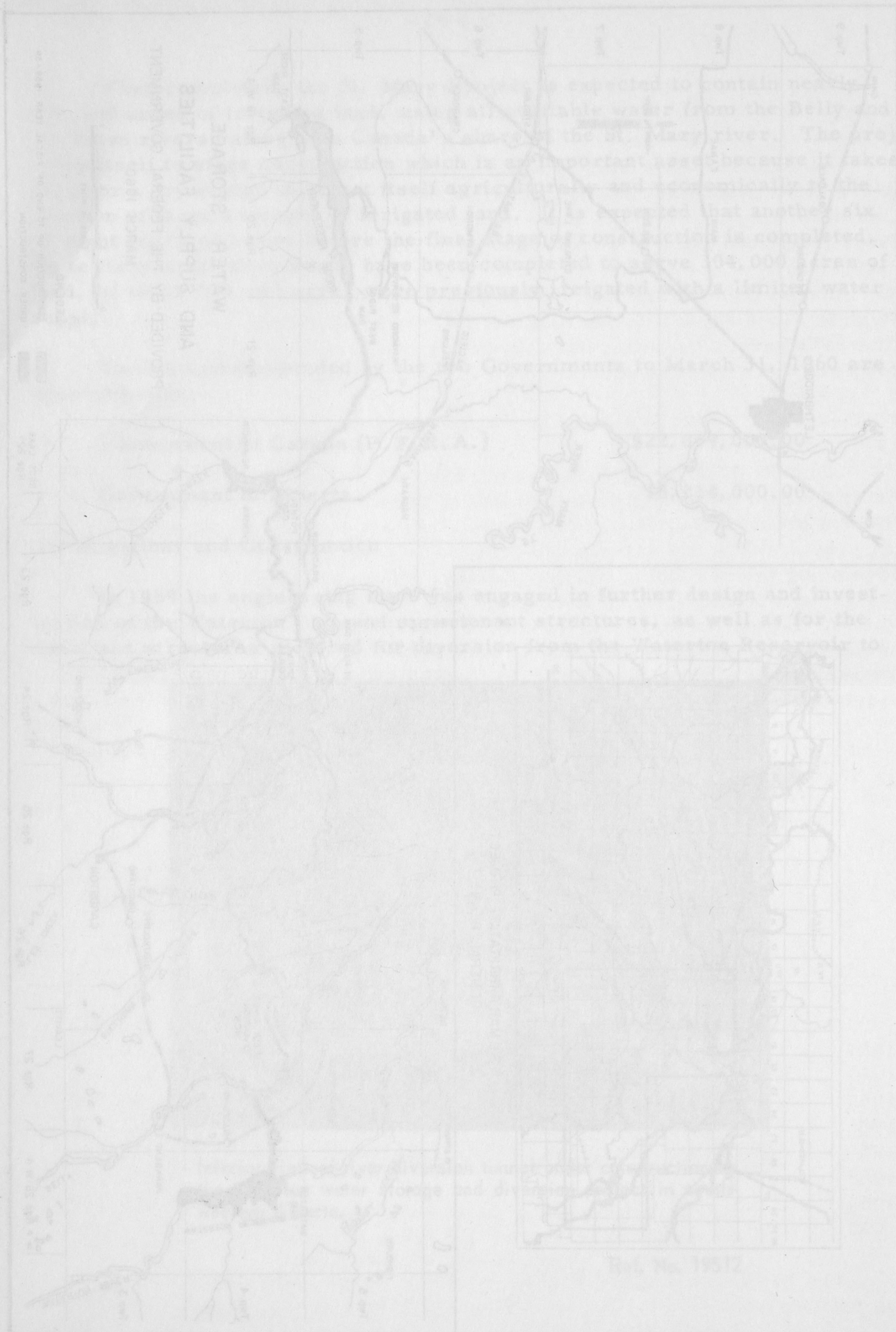


**WATER STORAGE
AND SUPPLY FACILITIES
PROVIDED BY THE FEDERAL GOVERNMENT
MARCH 1960**

LEGEND

CONSTRUCTION UP TO END OF FISCAL YEAR 1958-59
UNDER CONSTRUCTION





ST. MARY RIVER
ST. MARY DAM
ST. MARY RESERVOIR
CANADIAN GOVERNMENT
UNITED STATES GOVERNMENT
1951
1952

The St. Mary River is expected to contain new and valuable water from the Belly and St. Mary rivers. The project is an important need because it takes water from the St. Mary River and distributes it to the irrigated land. It is expected that another six years of construction is completed. The project has been completed to serve 64,000 acres of irrigated land. The project is expected to be completed by the U.S. Government to March 31, 1960.

The project is expected to be completed by the U.S. Government to March 31, 1960. The project is expected to be completed by the U.S. Government to March 31, 1960. The project is expected to be completed by the U.S. Government to March 31, 1960.

the Belly Reservoir. Further field surveys were carried on in the southeast portion of the project. Construction during the year included the Waterton Diversion Tunnel, completion of the Highway #5 Bridge Contract, and completion of the United Irrigation District Canal Relocation Contract.

Project Improvement and Maintenance

Minor alterations and additions to capital works already in operation are generally done by P.F.R.A. crews and equipment engaged in operation and maintenance on the project. Special work undertaken in 1959 included construction of open drains in Divisions 1, 2 and 3 to reclaim land damaged by seepage from the main canal, lining of a portion of the main canal to reduce seepage, and construction of a retaining wall and revised portal wall at the outlet of the St. Mary Diversion Tunnel. Maintenance work was confined mainly to replacing the clay lining in the main canal just below the St. Mary Reservoir. Other work included camp and reservoir landscaping and building maintenance.

Project Operation

Approximately 54,000 acres, or an increase of 15% occurred in the acreage irrigated in the new areas of the project in 1959. As a result of dry weather during the growing season in the eastern part of the project, water consumption was up 25% over the previous year. In contrast, relatively wet weather was experienced in the western portion where irrigation has been well established, with the result that the total water consumption for the project was 27,000 acre feet less than in 1958.

The following table shows project development since 1952:-

<u>SEASON</u>	<u>New works Constructed to serve (acres)</u>	<u>Old district served approximately (acres)</u>	<u>Water delivered from St. Mary Res. (acre feet)</u>
1952	37,000	118,000	186,000
1953	54,000	118,000	196,000
1954	96,000	118,000	246,400
1955	141,000	118,000	190,000
1956	168,000	118,000	202,430
1957	176,000	120,100	314,492
1958	176,000	120,100	272,132
1959	184,000	120,100	245,260
1960	184,000		

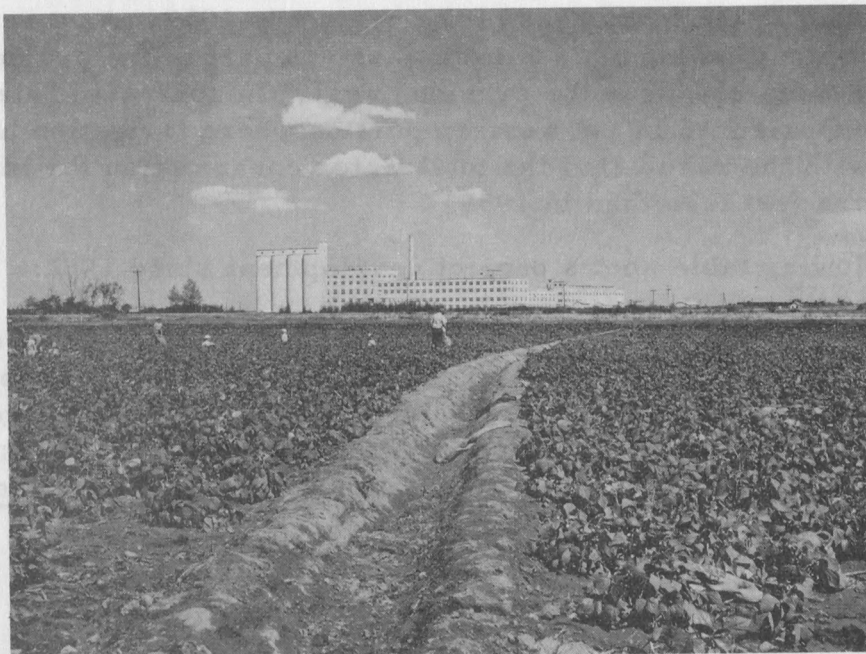
The newly constructed canal from Belly River to St. Mary Reservoir was put into operation for the first time in 1959.

Agricultural Development

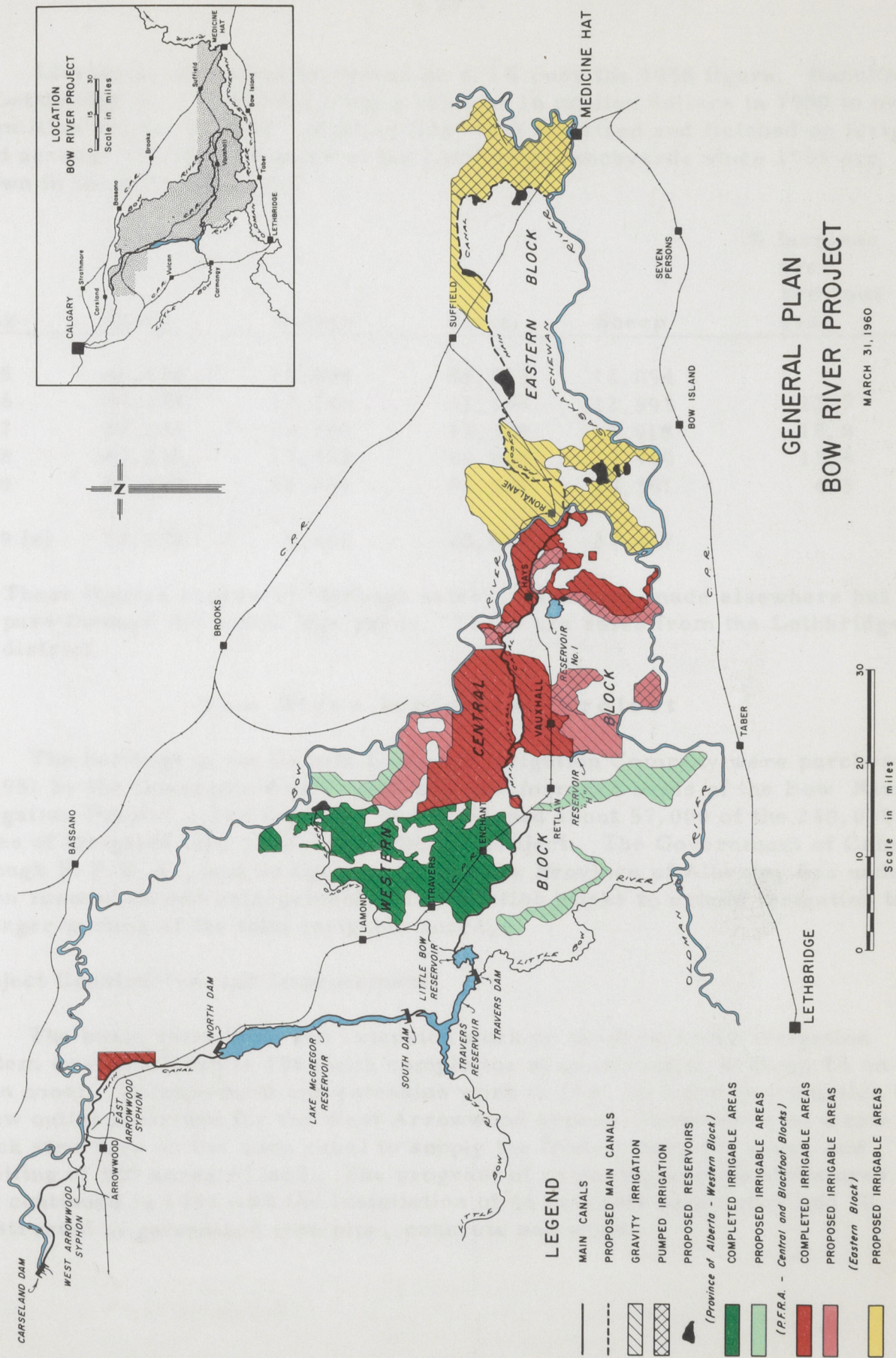
Early frosts combined with unfavorable growing conditions contributed to a decrease in the production of specialized crops. The acreage of sunflower seed for oil production increased to some 8,600 acres in 1959. A proposal to establish a shortening plant at Lethbridge indicates a large expansion for this crop. The following table shows the development taking place in the Lethbridge area.

	<u>1957</u>	<u>1958</u>	<u>1959</u>
Green vegetables	1,200 acres	1,500 acres	900 acres
Potatoes	4,800 "	5,500 "	4,500 "
Canning vegetables	8,000 "	10,000 "	10,000 "
Sugar beets	38,000 "	38,000 "	35,000 "
Sunflower seeds		1,000 "	8,600 "

✓ Another new development in specialized crops at Lethbridge is the processing of potatoes into frozen chips. This should result in an increase in the potato acreage.



A farmer and his family in the Taber district of the St. Mary Irrigation Project harvesting a commercial crop of beans grown under irrigation. Note sugar beet processing plant in background.



BOON HILLER PROJECT
GENERAL PLAN

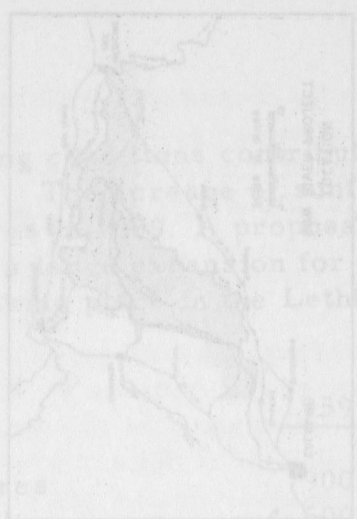
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- 6. LAKE
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LEGEND

Ref. No. 13862

1958

1,500 acres	10,000 "
2,000 "	35,000 "
3,000 "	8,600 "



Scale 1:50,000

Scale 1:100,000

Livestock production increased by 4.3% over the 1958 figure. Handlings at Lethbridge have increased from a value of 16 million dollars in 1950 to over 22 million dollars in 1959. Much of this stock is raised and finished on irrigated acreage. Livestock sales at the Lethbridge stockyards since 1955 are shown in the following table.

Year	Cattle	Calves	Hogs	Sheep	% Increase over previous year
1955	46,815	10,008	55,863	12,094	
1956	54,735	12,048	61,155	12,595	12.7
1957	69,035	14,380	65,389	13,918	15.8
1958	63,282	17,583	89,810	13,769	13.4
1959	67,333	12,187	94,500	18,361	4.3
1959 (x)	20,058	4,648	43,900	27,447	

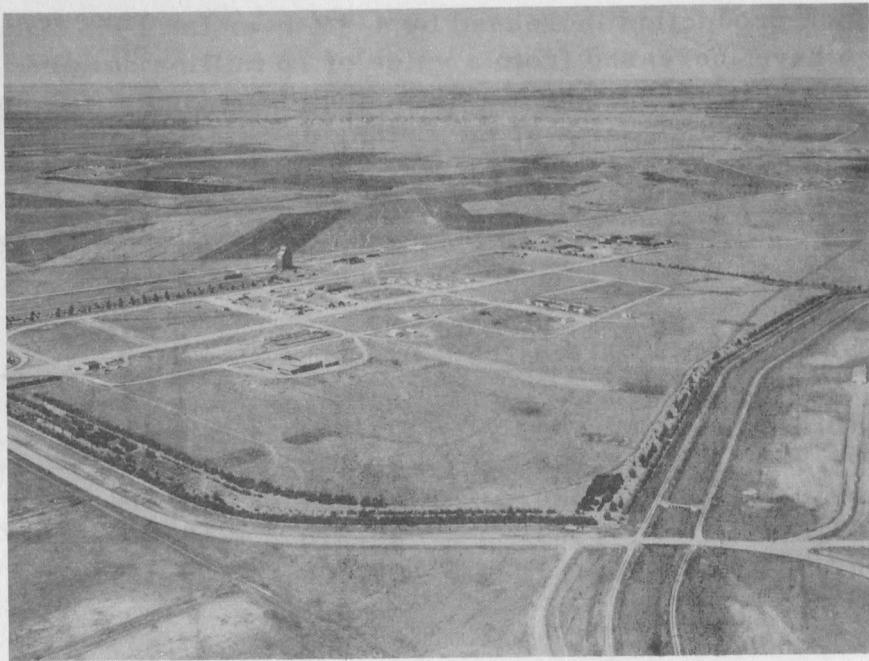
x - These figures represent "through sales", which are made elsewhere but pass through the Lethbridge yards. These are sales from the Lethbridge district.

Bow River Irrigation Project

✓ The holdings of the Canada Land and Irrigation Company were purchased in 1951 by the Government of Canada and now form the basis of the Bow River Irrigation Project. The Company had developed about 57,000 of the 240,000 acres of irrigable land associated with the project. The Government of Canada, through P. F. R. A., and by agreement with the Province of Alberta, has undertaken renovation and enlargement of the existing works to extend irrigation to a larger portion of the total irrigable acreage.

Project Construction and Improvement

The basic renovation and extension work on the Bow River irrigation system was concluded in 1959 with completion of construction of Drop 7A on the main canal. Improvement and extension work in 1959 included construction of a new outlet structure for the West Arrowwood syphon, installation of a new check structure on the main canal to supply the Distributary 'Y' area, and levelling of 500 acres of land. The program of replacing wooden structures was continued in 1959 with the installation of 46 concrete structures and 70 constructed of galvanized iron pipe, concrete and wood.



Aerial view of Town of Hays in the Hays district of the Bow River Irrigation Project. Note main irrigation supply canal in right foreground and pattern of irrigated land in centre background.

Ref. No. 18020



Water supply facilities established by P.F.R.A. on an irrigated community pasture in the Hays district of the Bow River Irrigation project.

Ref. No. 18769

During the year irrigation was extended to a 3,000 acre area northwest of Hays known as Distributary 'Y'. Gravity laterals and two open drains were installed by contract while project crews built 36 regional structures. Twelve hundred acres in this area can be irrigated by gravity; the remainder requires a pump lift of 15 feet. To improve the drainage system, 113,300 feet of canals were cleaned, drain spoil banks were levelled and grassed, and 2,625 feet of tile drain were laid to reclaim farm land in a seepage area at Hays.

The demand for irrigation water was average for the year. Water was turned into the canal system on May 19 and shut off on October 20. During the year 651 farm units in the Vauxhall and Hays areas used 72,580 acre feet of water. Water delivered to the provincial Bow River Development is measured by automatic water recorders operated by the Water Resources Branch of the Department of Northern Affairs. For internal system operations, P.F.R.A. operates four canal flow stations and four reservoir level gauges.

The water level in Lake McGregor was raised 1.15 feet during the year to increase the storage capacity in the reservoir to 221,846 acre feet. Total water in storage on the project at March 31, 1960 was 275,241 acre feet or sufficient to supply the irrigation demand for one year without further diversion from the Bow River.

Agricultural Development

The severe winter resulted in winter killing of 75% of the alfalfa crop and all the clover. Rainfall for the season was above normal and was sufficient to give good yields on dry land. Where augmented by irrigation, crop yields were above average. Hail again damaged crops in the Hays district causing from 25 to 100 per cent damage on forty farms northwest of the town.

Sunflowers and soybeans were grown on a test basis in 1959. The dehydrating plant established by the Alberta Dehydrating Company at Vauxhall in 1959 produced 1,500 tons of dried alfalfa and processed 500 tons of potatoes during the year. In the off season the plant grinds, mixes and pellets feed for livestock. The livestock industry continues to be the stabilizing influence on the Bow River Project.

South Saskatchewan River Project

On Friday, July 25, 1958, the Government of Canada signed the agreement previously ratified by the Government of Saskatchewan, which authorized commencement of construction of the South Saskatchewan River Project. This is a large multi-purpose water conservation scheme on the South Saskatchewan River in south-central Saskatchewan, the purpose of which will be to make more efficient use of the water resources in this major prairie river through irrigation, power, stream flow regulation, municipal and urban water supply, and recreation.



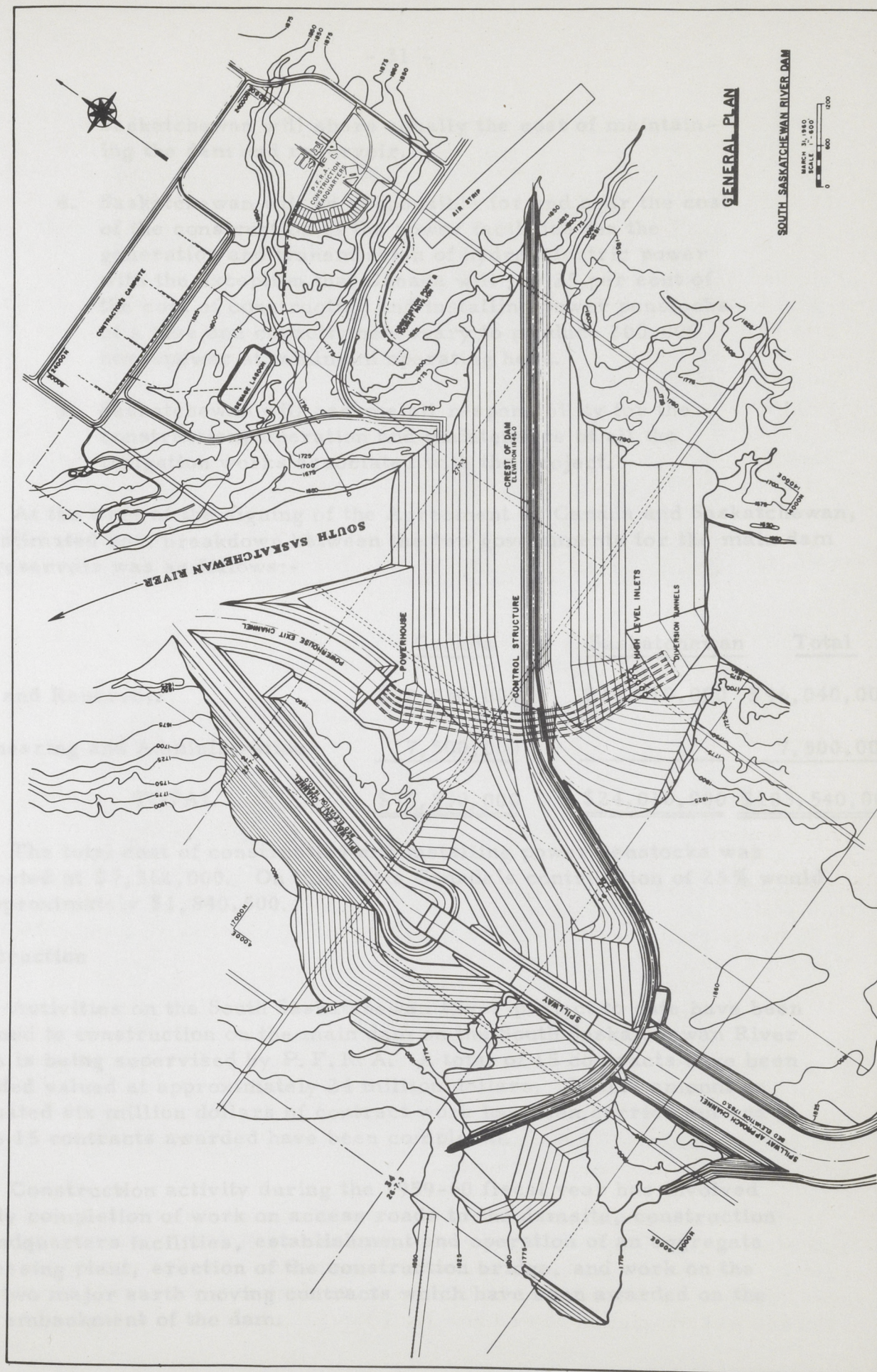
Aerial view of construction area South Saskatchewan River Dam project viewed from the north. Note P.F.R.A. construction headquarters at extreme left of photograph.

Ref. No. 19825

Control of the river will be achieved by construction of 2 dams; the major one on the South Saskatchewan River midway between the towns of Elbow and Outlook; the other at the divide between the valleys of the South Saskatchewan and the Qu'Appelle.

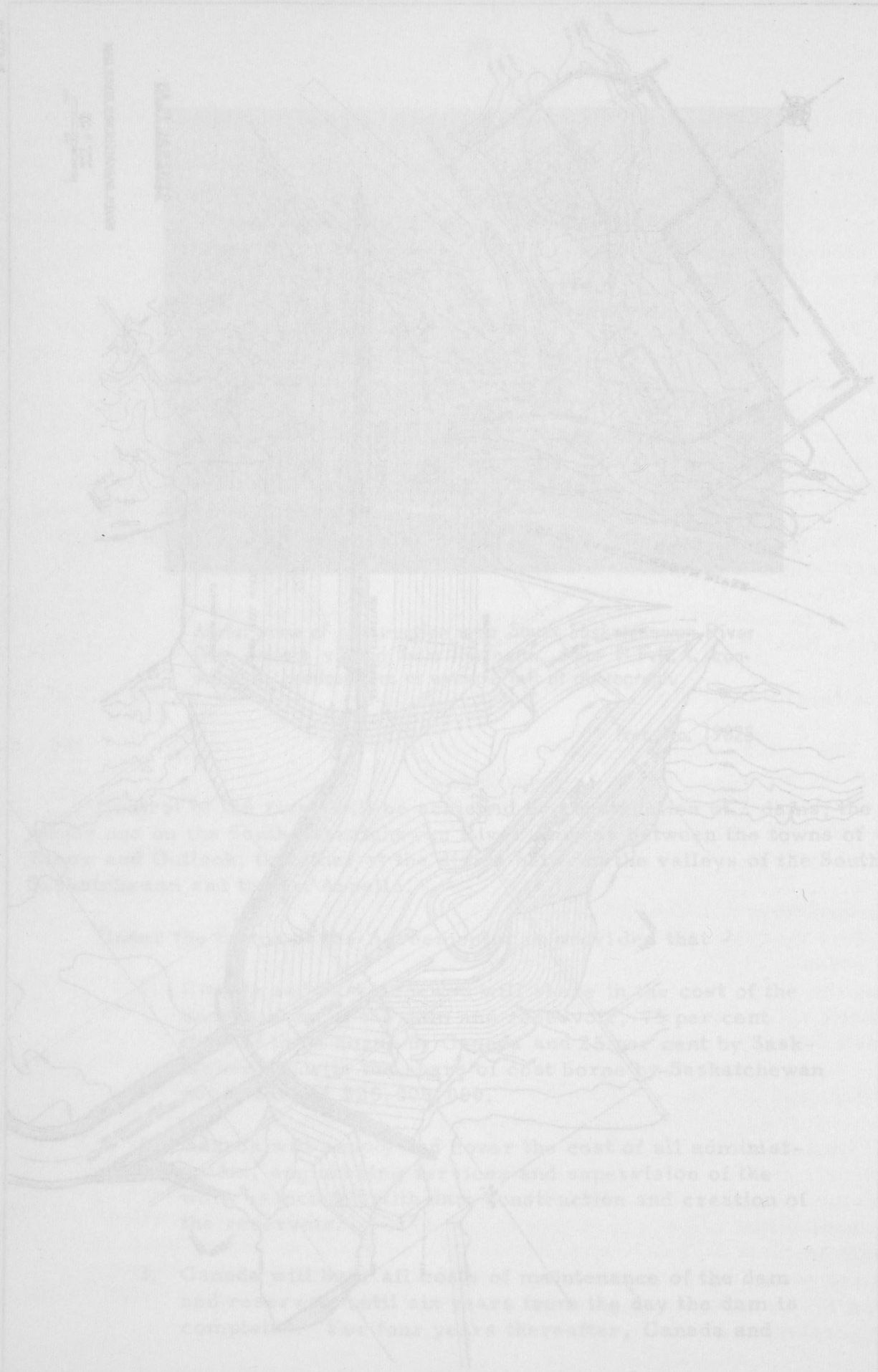
Under the terms of the Agreement it is provided that -

1. Canada and Saskatchewan will share in the cost of the construction of the dam and reservoir, 75 per cent thereof to be borne by Canada and 25 per cent by Saskatchewan, with the share of cost borne by Saskatchewan not to exceed \$25,000,000.
2. Canada will supply and cover the cost of all administration, engineering services and supervision of the work associated with dam construction and creation of the reservoir.
3. Canada will bear all costs of maintenance of the dam and reservoir until six years from the day the dam is completed. For four years thereafter, Canada and



THE CANADIAN PACIFIC RAILWAY

1905



The dam is on the South Saskatchewan River, about 10 miles between the towns of
Lloydminster and Olfund, the dam is 1,100 feet high, and the valleys of the South
Saskatchewan and the North Saskatchewan.

Under the terms of the agreement it is provided that
the cost of the dam shall be borne by the Government of Canada, 75 per cent
of the cost being borne by Canada and 25 per cent by Sask-
atchewan, and the cost of the dam shall be borne by Saskatchewan.

The dam will lower the cost of all adminis-
tration, engineering, and operation of the
dam, and the construction and creation of
the dam.

Canada will bear all costs of maintenance of the dam
and repairs until six years after the day the dam is
completed. For four years thereafter, Canada and

Saskatchewan will share equally the cost of maintaining the dam and reservoir.

4. Saskatchewan will be responsible for and bear the cost of the construction of the power facilities for the generation and transmission of hydro-electric power with the exception that Canada will pay 25 per cent of the cost of constructing and installing power penstocks of a size and capacity necessary to produce 200,000 horsepower at minimum operating head.
5. Saskatchewan will assume all responsibility for the construction, operation and maintenance of all the irrigation works associated with the project.

At the time of the signing of the Agreement by Canada and Saskatchewan, the estimated cost breakdown between the two governments for the main dam and reservoir was as follows:-

	<u>Canada</u>	<u>Saskatchewan</u>	<u>Total</u>
Dam and Reservoir	\$72,030,000	\$24,010,000	\$96,040,000
Engineering and Administration	<u>7,500,000</u>	<u> </u>	<u>7,500,000</u>
TOTAL	<u>\$79,530,000</u>	<u>\$24,010,000</u>	<u>\$103,540,000</u>

The total cost of constructing and installing power penstocks was estimated at \$7,362,000. On this basis Canada's contribution of 25% would be approximately \$1,840,500.

Construction

Activities on the South Saskatchewan River project to date have been confined to construction on the main dam on the South Saskatchewan River which is being supervised by P.F.R.A. A total of 15 contracts have been awarded valued at approximately 24 million dollars. Of this amount an estimated six million dollars of contract work has been carried out and 7 of the 15 contracts awarded have been completed.

Construction activity during the 1959-60 fiscal year has involved mainly completion of work on access roads to the damsite, construction of headquarters facilities, establishment and operation of an aggregate processing plant, erection of the construction bridge, and work on the first two major earth moving contracts which have been awarded on the main embankment of the dam.



Heavy Caterpillar equipment moving earth on Embankment
Stage 1 contract, South Saskatchewan River Dam Project.

Ref. No. 19026

A summary of the work by projects is given in the following.

East Access Road (Contract 1) - Work on this contract, involving the construction of approximately 13 miles of road from the damsite east to No. 19 Highway, commenced late in September 1958 and was completed May 30, 1959.

Processing of Concrete Aggregate (Contract 2) - Construction commenced on this contract June 1959 and except for a number of interruptions due to breakdowns and re-arrangement of equipment, continued throughout the summer until November 13, 1959 when operations were discontinued due to freezing weather conditions. The total amount of aggregate processed during this period amounted to 208,212 tons separated into fine aggregate and three different sizes of coarse aggregate.

Construction of Headquarters Services (Contract 3) - Items of work under this contract included installation of a complete water and sewerage system, construction of gravelled roads within the construction headquarters area, ditches, and concrete sidewalks. Construction work began November 1958 and was completed September 30, 1959.

Construction Headquarters Buildings (Contract 4) - This contract covered construction of forty housing units and five headquarters buildings, including six types of housing units, a staff house, an engineering building, an assembly hall, a field laboratory, and a combined garage, firehall, and warehouse, commenced in December 1958 and was completed by November 30, 1959.

Construction Bridge Substructure (Contract 5) - Work on this contract, involving construction of 4 river piers and the west abutment substructure for the construction bridge, started in December 1958, and was completed May 1959.

Embankment - Stage 1 (Contract 6) - This contract was awarded in February 1959 and involves construction of the embankment on the east abutment of the river to approximately one half the final height of the dam. Work progressed satisfactorily during the summer season. Considerable delay was experienced during the fall, however, due to adverse weather conditions. Placing of impervious fill was discontinued in October 1959. Hauling and placing of pervious fill continued uninterrupted through the winter period. The contract is now approximately 50 % complete.



Erecting steel superstructure for construction bridge, South Saskatchewan River project, during the winter of 1959.

North Access Road (Contract 7) - This contract covers construction of a road extending approximately 15 miles north from the damsite to Broderick on Highway 15, and access roads to the construction area. This operation started early in April 1959 and was completed by July 31 of the same year.

Bridge Superstructure (Contract 8) - Work under this contract includes construction of 4 approach piers and the complete superstructure required for the bridge. By March 31, 1960 all the piers and the structural steel for the 4 main spans were completed.

Embankment - Stage 2 (Contract 9) - Included in this contract is construction of the main dam embankment on the west abutment, extending to a point about midstream in the river, to approximately half the height of the dam. The main items of construction include excavation of approximately 18,000,000 cubic yards of earth material and placement of 14,000,000 cubic yards of compacted embankment. Work commenced on June 12, 1959 and satisfactory progress has been made to date with the contract to the end of the year about 21 % complete. In the early stages, work was confined largely to excavating waste material from embankment foundations and borrow areas. A perimeter dyke was then built around the construction area in the river section and sand was hauled in to form the base for the earth fill. When this was completed, placing of impervious embankment proceeded as well as excavating downstream filter trenches, and backfilling with select pervious material. Although placement of impervious embankment terminated at freeze-up, placing of pervious fill and hauling of stripping material to waste areas continued throughout the winter.

Well-point Water Supply (Contract 10) - The above contract called for construction of a well-point water supply system to serve the Construction Headquarters. The contract was awarded on March 23, 1959 and work was completed by the end of June 1959.

Water Supply Pumping Equipment (Contract 11) - Pumping units ordered under this contract arrived on the site August 1959. Installation and testing of the pumps, however, were not completed until the latter part of February 1960.

Tourist Pavilion (Contract 12) - This contract provides for construction of a modern building at the site to provide a safe place for visitors to view construction activities on the dam. Space is provided to house models and other displays of the construction, and benefits to be derived from the South Saskatchewan River Project. Construction work on the building started in September 1959 and with the exception of some exterior painting still to be done when weather conditions permit, was completed by December 31, 1959.

Downstream Tunnels (Contract 14) - The contract for this work, which includes excavation of approximately 10,000 feet of tunnel 20 feet in diameter;

lining of tunnels with 30 inch reinforced concrete, installation of steel lining in tunnels and construction of tunnel portal sections, was awarded on February 29, 1960. Work on this contract is scheduled to commence during July 1960.

Supply of Ring Beams (Contract 15) - the Company contracted to supply, fabricate, deliver and stockpile the 5,500 structural steel ring beams specified under this contract, began operations in January 1960. Activity to date has been confined to establishment of the company's plant at Moose Jaw. It is anticipated that delivery of ring beams to the damsite will begin shortly.

Highway Revision - Birsay to damsite (Contract 16) - This contract, involving construction of approximately 15.1 miles of new road, is a portion of the construction required to revise Highway #45 which will be inundated by the reservoir. No work on this contract, which was awarded November 12, 1959, has been carried out to date.

Public Relations

Although actual construction work on the dam began the preceding fall, a ceremony was held at the damsite on May 27, 1959 to officially mark commencement of construction on this major project. An estimated 14,000 people turned out to witness the ceremony which was highlighted by setting off a dynamite blast triggered by the Prime Minister of Canada.

It is estimated that during the year there were approximately 18,000 visitors to the damsite, in addition to those present at the Official Opening. Actual counts in the months of heaviest tourist traffic, July, August and September, showed as many as 1,500 visitors on most Sundays. An estimated 80% of these were from points within a radius of 150 miles of the damsite. The remaining 20% came from other parts of the province, from eastern and western Canada, and a few from the United States and abroad. Also several official tours were conducted during the year.

Pre-Development Farm

The Pre-Development Farm near Outlook, Saskatchewan, contains about 155 acres of sandy loam soil. The project was established in 1949 to serve as a pilot model for demonstrating cropping and irrigation practices which might be applicable to future irrigation development in the area.

Ten fields of 10 to 12 acres each were set out in a ten-year rotation with six years in forage crop, three in cereal and one in potatoes. Another area of 24 acres was devoted to irrigated pasture, the remainder being used for farmstead and tree belt. Irrigation water is pumped from the Saskatchewan River and distributed by both gravity and sprinkler methods.

The relative novelty of seeing crops irrigated in a dry farming area has always created public interest in the Pre-Development Farm. Now that farmers realize the possibility of large scale irrigation in the area, their interest has become more intense and inquiring. The number of visitors to the farm increased considerably in the present year and the farm manager was asked to attend local study groups to discuss irrigation, farm practices, crop rotation, and management problems. Some of the cropping methods and farm practices have been modified to better illustrate points which seemed to be of most interest. The nearby experimental plots operated by the Research Division provide a convenient complement to the cropping practices on the farm.

The following table shows crop yields for 1959, the average yields obtained over the past 4 years, and the average amount of irrigation water applied.

<u>Crop</u>	<u>Yield/acre 1959</u>	<u>Average/acre 4 years</u>	<u>Inches of water applied/acre</u>
Wheat	52 bus.	45 bus.	7 1/2 in.
Oats	84 "	90 "	7 1/2 "
Barley	88 "	64 "	10 "
Potatoes	8.2 tons	9.6 tons	8 "
Hay	2.8 "	3.4 "	11 "
Pasture			12 "

Yields of cereal crops for 1959 were near or better than average, but potatoes took a slight drop in production. Hay yields were also lower due to losses incurred as a result of heavy rains at the time of the first cutting in June. There has been no satisfactory explanation of the lower average yield of potatoes on the farm. The matter has been referred to soil and fertilizer specialists for study.

Of the cereal grain produced each year, a percentage is retained for seed, about two-thirds is fed to livestock on the farm, and any surplus is used by the Community Pasture Branch of P. F. R. A. A full scale live-stock enterprise would use nearly all the grain and hay produced on the farm and utilize the manure as fertilizer.

Potatoes are marketed in quantity to local stores and wholesalers. No provision has been made for processing for retail trade as this is not related to the primary purpose of the farm.

The irrigated pasture was utilized during the year for the grazing of 40 head of grade steers purchased at Saskatoon stockyards in late February 1959. The steers were fed hay and grain until grazing was available in May. During the period May 15 to September 15 these steers grazed on 18 acres

and had grain and hay available from self feeders. They were then sold when their net weight was 1,000 lbs. Sixteen were sold on September 15, twenty on November 1, and 4 on December 10. The average gain in weight per animal was 410 lbs. The gain attributed to grazing, amounted to 513 lbs of beef per acre. Plans are to repeat this operation in 1960. In this case, however, 50 steers will be used. With 40 head it has been found that the pastures are not being used to full capacity.

Buffalo Pound Lake Water Supply Project

Buffalo Pound Lake, located in the upper Qu'Appelle Valley about 20 miles north of the city of Moose Jaw, is one of the principal sources of urban water supply for the cities of Regina and Moose Jaw. Through an agreement with the Province of Saskatchewan, the Government of Canada has accepted the responsibility for maintaining the water level of the Buffalo Pound Lake Reservoir.

Pending completion of the South Saskatchewan River Dam, the level of Buffalo Pound Lake is to be maintained by supplementing the flow of the Qu'Appelle River with water pumped from the South Saskatchewan. Work on construction of the pumping plant and conveyance system was begun in 1955 and completed in June 1958.

During 1959-60 the pumping season started on May 20 and ended on October 3. An estimated 18,933 acre feet of water were pumped from the South Saskatchewan River, of which approximately 9,361 acre feet reached Buffalo Pound Lake. Through the use of gauging stations it was found that about 42 % of the water was lost in the Eyebrow Lake area. In an attempt to reduce this loss the construction of a diversion canal around the lake was proposed. Tenders for this work were called in November 1959 for construction the following spring before commencement of the 1960 pumping season.

Also included in this fiscal year's work was the installation of some 34,620 square feet of plastic lining over a section of the low level canal leading from Pump House No. 1, where seepage had become a problem. In addition, some sloping of the hill above Pump House No. 1 was carried out during the year as well as a small amount of maintenance work on Moose Jaw Creek Diversion into Buffalo Pound Lake.

Emma Lake Conservation Project

The purpose of this project is to provide storage in Anglin Lake and a pumping pond from which water may be pumped into Emma Lake to restore and maintain the level of this lake. Supervision of the construction of this project, which is located in the Prince Albert National Park, is being provided by P.F.R.A. for the Federal Department of Northern Affairs and National Resources.

The contract for the work was awarded on October 22, 1959. Due to freezing winter conditions, however, only a preliminary start could be made and construction was shut down three days later.

Saskatchewan River Reclamation Project

Between Tobin Rapids in Saskatchewan and Cedar Lake in Manitoba, the vast Saskatchewan River Delta contains approximately two million acres of land which over the years, many authorities have felt can be reclaimed and converted into productive farm land. A narrow, north-south ridge on which the Town of The Pas is located, divides the delta area into two sections. The Sipanok and Pasquia areas, lying to the west of this ridge, have been the subject of extensive study and development by P. F. R. A. since 1950. East of the ridge lies the Moose Lake area, which during 1959 has been the subject of a comprehensive program of field and office investigations.

Sipanok Area

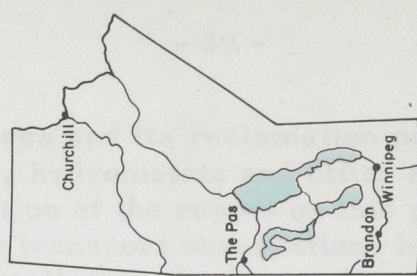
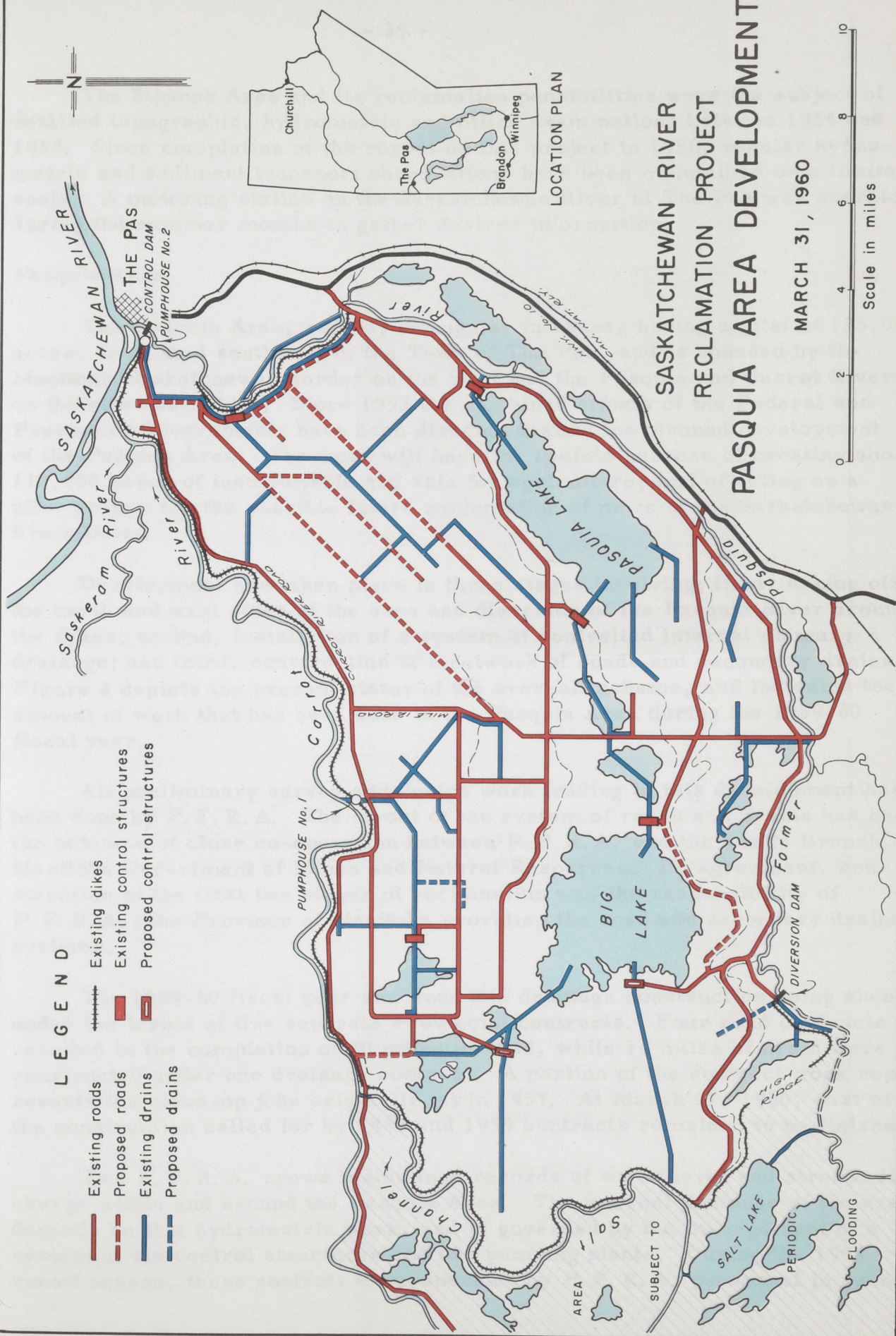
This portion of the delta lies mostly in the Province of Saskatchewan and contains the bulk of the potentially arable land. It extends approximately from Squaw Rapids to The Pas, and is bordered on the north and south by the Saskatchewan and Carrot Rivers, respectively.



Aerial photograph of general area surrounding the town of The Pas in northern Manitoba, showing Carrot River Dyke and Carrot River Road in foreground and Pasquia River Control Dam near town limits.

LEGEND

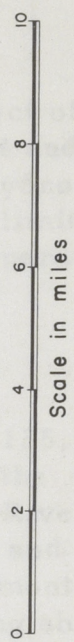
- Existing roads
- Proposed roads
- Existing drains
- Proposed drains
- Existing dikes
- Existing control structures
- Proposed control structures



LOCATION PLAN

SASKATCHEWAN RIVER RECLAMATION PROJECT PASQUIA AREA DEVELOPMENT

MARCH 31, 1960



TEMPORARY AREA DEVELOPMENT
RIVER MANAGEMENT
REGULATION PROJECT

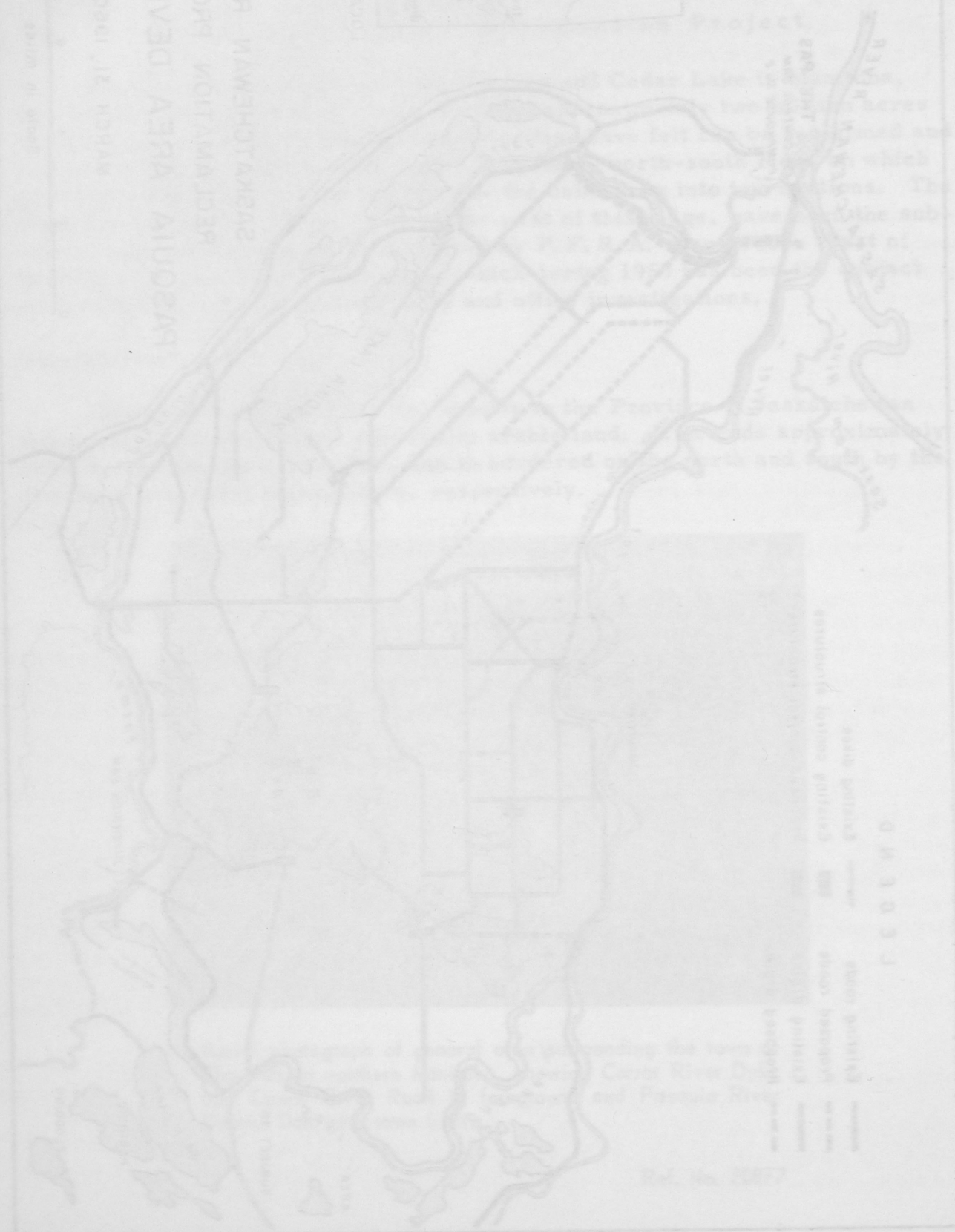
MARCH 15, 1960

Scale in feet

MAJOR WATERSHEDS



Project



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Ref. No. 20077

The Sipanok Area and its reclamation possibilities were the subject of detailed topographic, hydrometric and office examinations between 1954 and 1957. Since completion of the report on this project in 1956, regular hydrometric and sediment transport observations have been maintained on a limited scale. A metering station on the Saskatchewan River at The Pas was operated during the summer months to gather desired information.

Pasquia Area

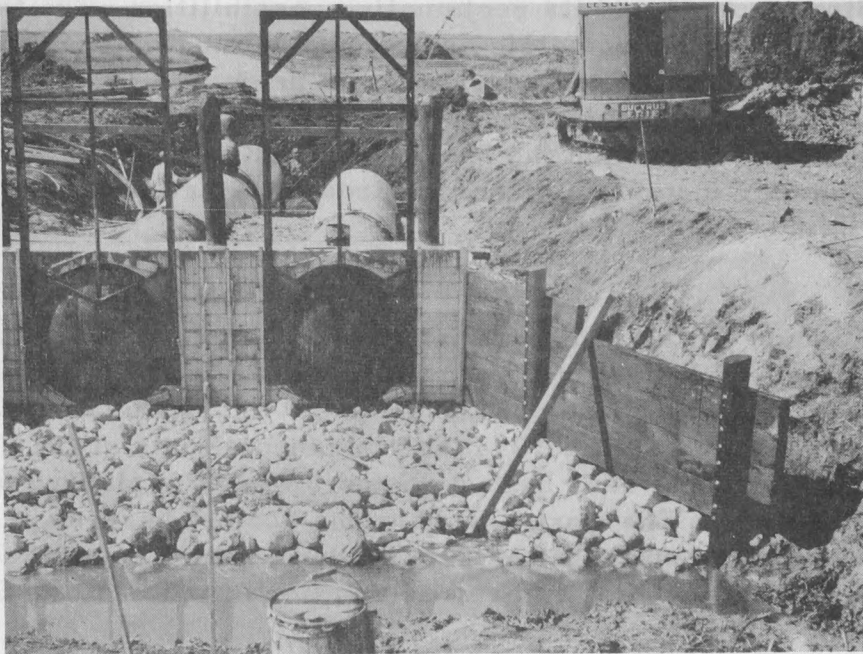
The Pasquia Area, roughly triangular in shape, having a total of 135,000 acres, is located southwest of the Town of The Pas, and is bounded by the Manitoba-Saskatchewan border on the west and the Pasquia and Carrot Rivers on the other two sides. Since 1953 the combined efforts of the Federal and Provincial Governments have been directed toward the planned development of the Pasquia Area. The work will have the twofold purpose of creating about 110,000 acres of land suitable and safe for agriculture, and of acting as a pilot project for the possible future reclamation of more of the Saskatchewan River Delta.

Development has taken place in three stages involving; first, dyking off the north and west sides of the area and diversion of the Pasquia River around the dykes; second, installation of a system of controlled internal primary drainage; and third, construction of a network of roads and secondary drains. Figure 4 depicts the present status of the over-all scheme, and indicates the amount of work that has been done in the Pasquia Area during the 1959-60 fiscal year.

All preliminary survey and design work leading to this development has been done by P. F. R. A. The layout of the system of roads and drains has been the outcome of close co-operation between P. F. R. A. and the Lands Branch, Manitoba Department of Mines and Natural Resources. By agreement, construction of the first two stages of reclamation was the responsibility of P. F. R. A.; the Province of Manitoba providing the road and secondary drainage systems.

The 1959-60 fiscal year saw road and drainage construction going ahead under the terms of five separate Provincial contracts. Four road contracts resulted in the completion of 30 miles of road, while 14 miles of drain were constructed under one drainage contract. A portion of the contract work represents the clean-up jobs originally let in 1957. At March 31, 1960, part of the construction called for by 1958 and 1959 contracts remained to be finished.

Two P. F. R. A. crews maintained records of water level and stream discharge within and around the Pasquia Area. The internal drainage of the area depends on this hydrometric work, and is governed by the management of a system of six control structures and two pumping plants. During the 1959 runoff season, these controls were operated by P. F. R. A. personnel in such



Control gates under construction on one of the principal drainage channels in the Pasquia Development area of the Saskatchewan River Reclamation project.

Ref. No. 13899

a way as to prevent outside water from entering the project area, and interior drainage from interfering with construction activities.

Other items of work completed during the year included levelling and trimming spoil banks, improvement of certain culvert installations, and seeding of nearly 40 miles of road, dyke, and waste areas.

Moose Lake Area

The Moose Lake Area extends from The Pas to Cedar Lake, and is bounded on the north by the Canadian National Railway's line to Churchill, Manitoba, and on the south by the Summerberry River. In 1958, P.F.R.A. was requested to perform field and office investigations necessary to permit the preparation of a preliminary report on reclamation possibilities in this easterly part of the Saskatchewan River Delta.

All data available from earlier Federal and Provincial studies were compiled and a winter survey program, sufficiently comprehensive to provide missing information, was drawn up. Four survey parties, working from camps in the Moose Lake Area, completed this assignment between January 6 and March 14, 1959. The job included control levels, channel cross sections,

dyke location profiles, and soil sampling, plus control structure site surveys. This field work is outlined here since it was omitted from the report describing the operations of the 1958-1959 fiscal year.

The results of this and previous surveys were combined in the Winnipeg office to form the basis of study which required the services of an engineer for four months.

Assiniboine River Project

Along the Assiniboine River between Portage la Prairie and Headingly in Manitoba, a continual problem of flooding has faced farmers and communities over the years often causing considerable damage to land, buildings and other property in districts adjacent to the river.

During the early years the Federal Department of Public Works looked after most of the flood protection work that was carried out in the area. In 1950, however, responsibility for the work was transferred to the Canada Department of Agriculture under P.F.R.A. and has remained under this jurisdiction ever since.

Flood control activities carried out by the P.F.R.A. along the Assiniboine have mainly involved construction of dykes and channel improvement work. In addition to this, however, a considerable amount of survey has been conducted both on the upper and lower reaches of the river, studying potential storage sites that would provide more effective stream flow regulation throughout the river system.

Assiniboine River Dykes

The final gaps in the Assiniboine River dykes below Portage la Prairie, Manitoba, were closed during the year requiring construction of approximately 4,000 feet of dyke along the north bank of the river. Heavy bush along the location of this dyke was removed by hand labour preliminary to construction.

Elsewhere along the dykes, borrow pit drainage and trimming were completed and a total of 40 acres of dyke right-of-way was seeded to grass. In addition, two drain culverts, one at the outlet of Sayer Creek into the Assiniboine River and a second on Mill Creek at its junction with the river, which were damaged by floods earlier in the year, were repaired and improved.

Russell and Shellmouth Projects

These two proposed reservoirs are located on the Assiniboine River upstream of the confluence of the Qu'Appelle River near the Towns of Russell and Shellmouth in Manitoba. The two schemes, one the alternative of the other, have been the subject of considerable study for several years. Interest in them

was revived with the submission to the Province of Manitoba, of the Manning Royal Commission's report on the cost-benefit aspects of flood control proposals set forth in the Red River Basin Investigation Report. The Russell Project was one of two principal recommendations by the Commission for flood control work on the Assiniboine River.

Investigations concerning the projects carried out during 1959 were principally confined to office studies. A complete re-appraisal of the Russell project was undertaken during the year and a similar study commenced on the Shellmouth proposal.

Holland Dam

Routine engineering investigations carried out in the Assiniboine River Valley revealed that topography in the vicinity of Holland, Manitoba, was favourable for the creation of a large storage reservoir. Studies were therefore carried out to see whether development in this area presented an alternative to the Portage Diversion flood control scheme, which would have the added advantage of being capable of storing excess waters during heavy flows in the river, for beneficial use downstream.

These studies which were begun in 1958, are continuing.

Northwest Escarpment and Interlake Reclamation Projects

The work described in this section is located along the Manitoba Escarpment on watersheds originating out of the eastern and northern slopes of the Riding, Duck and Porcupine Mountains, and in the southern part of the area between Lakes Winnipeg and Manitoba. These projects all come under the terms of the Federal-Provincial Northwest Escarpment and Interlake Region Agreement.

This agreement, originally entered into in 1949, and renewed annually with minor modifications up to and including 1959, authorizes equal sharing by the Governments of Canada and Manitoba of the first costs of mutually agreed-upon flood and erosion control works. At the time of each renewal of the agreement, a limit is set on the amount of the Federal contribution, and the area within which works may be undertaken is broadly defined. During the decade just past, projects having a total cost of approximately \$2,000,000 have been undertaken on this co-operative basis.

Individual works have been designed and constructed under the direction of the engineering staffs of either the Federal or Provincial Governments. Under the agreement the costs of these services are not shared but are paid by the agency actually doing the work. To date, P.F.R.A. has had responsibility for the engineering on all projects except those involving headwater

storage reservoirs on streams in the Duck and Porcupine Mountain Provincial Forest Reserves. Engineers of the Manitoba Department of Mines and Natural Resources were in charge of the latter work until this year. The recent Provincial reorganization has resulted in this portion of the program being taken over by the Water Control and Conservation Branch, Manitoba Department of Agriculture.

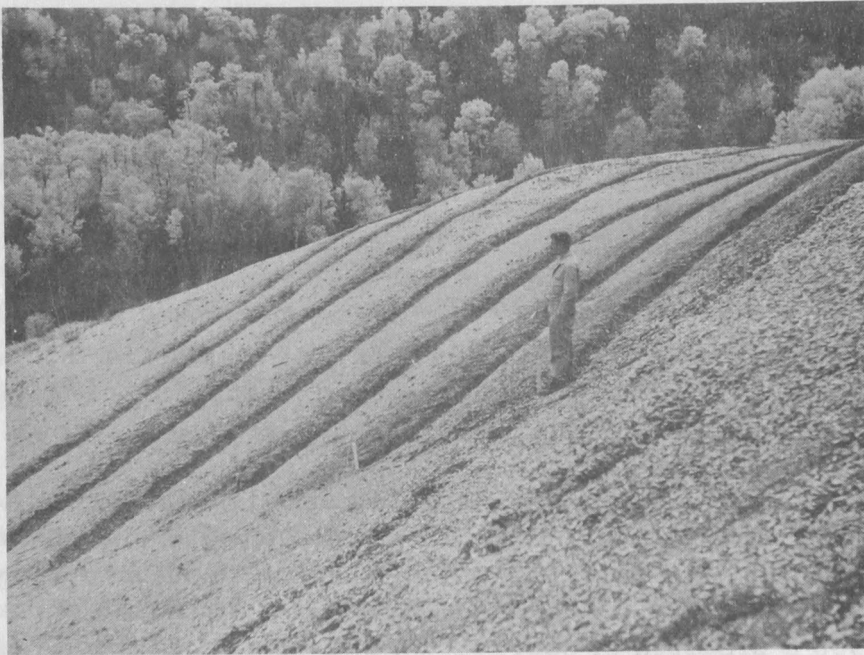
Northwest Escarpment

During the year major attention in this area was devoted to the Wilson Creek Experimental Watershed Project located on the east escarpment of Riding Mountain, southwest of the Village of McCreary, Manitoba.

A nine square mile area of wooded watershed on the headwaters of Wilson Creek lying inside the boundaries of the Riding Mountain National Park was selected in 1957 as being typical of many flood producing basins along the eastern slopes of the Riding, Duck and Porcupine Mountains. Since early 1958 a program of observation and experimentation has been initiated within the area under the direction of the joint Federal-Provincial Committee on Headwater Flood and Erosion Control. The object of this work is to discover the remedial effect that headwater control can have on



Flash floods originating off the eastern slopes of the Riding Mountain have created erosion problems such as are shown in the above picture on Wilson Creek. Studies are currently being undertaken to rectify this problem.



The contouring and seeding to trees on shale banks on Wilson Creek are some of the methods currently being investigated to stabilize such areas on the eastern slopes of the Riding Mountains.

Ref. No. 51978-8

flood and erosion problems in the lower reaches of such streams, and to evolve methods of control which can be applied to other similar basins on the escarpment. Work to date has consisted mainly of construction of access roads and trails, installation of hydrometeorological observational equipment, mapping of soils and vegetation, and production of reliable topographic plans of the area. Some experimental slope contour work was also carried out during the current year.

Other activities in the area during the year included a continuation of experimental bank protection work on the headwaters of Edwards Creek and investigations concerning a build-up of sediment in Lake Dauphin at the outlet of the Edwards Creek-Jackfish Creek floodway channel. Surveys were also continued in the Pine River and Woody River districts of the Northwest Escarpment Project in an attempt to find a solution to the serious flood problem which exists along the course of these two water systems.

Interlake Region

Principal development activity in this region during the year has been in connection with the construction of the Burnt Lake Drain begun by P. F. R. A. in 1958.

Burnt Lake lies in a marshy area of low agricultural productivity located northeast of Lundar, Manitoba, on the Lake Manitoba side of the interlake divide. The Burnt Lake Drain connects this marshy area with an existing drainage channel named Swan Creek Drain, by way of a new ditch crossing many smaller sloughs, which empties into Lake Manitoba. The contract covering this work under the Northwest Escarpment-Interlake Agreement called for enlargement of the existing Swan Creek Drain and its extension through construction of a new ditch to Burnt Lake. Two construction seasons were required to complete the work. The downstream end of Swan Creek Drain was enlarged for 12 miles in the late fall of 1958. Excavation was resumed in May 1959 and by mid-August the remaining 5 miles of the 17 mile drain, and 13 miles of new drain were completed. Also included in the program of work during 1959 was construction of 3 earth fill road crossings, 5 municipal bridges, and 9 concrete-based ford crossings.

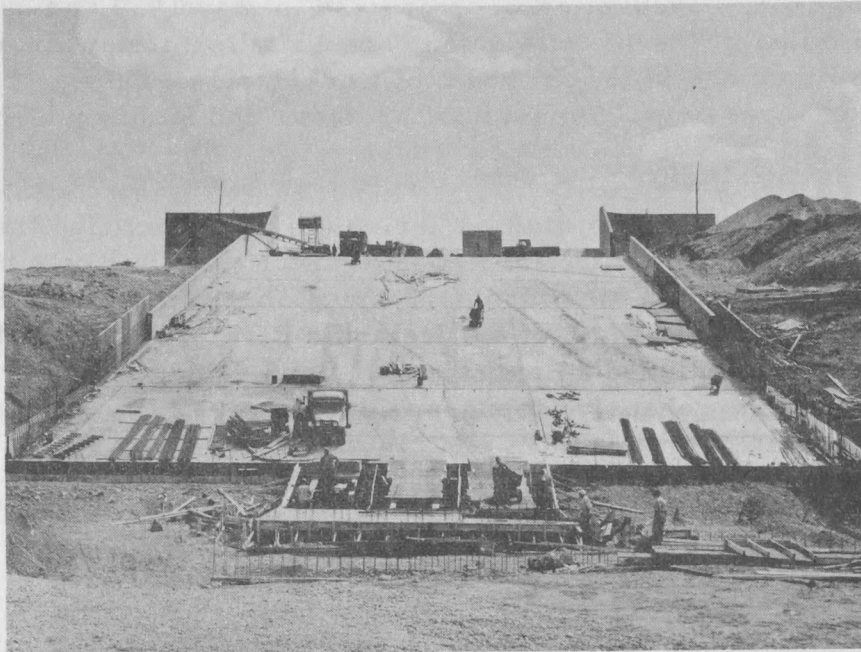
Other projects which were studied during the year included the Icelandic River Project involving the control of floods on the Icelandic River between Arborg and Lake Winnipeg in Manitoba, and the Fish-Dennis Lakes Flood Control Project located just south of the Icelandic River Basin. On both projects the studies undertaken included an appraisal of flood damage and agricultural benefits as well as comprehensive topographical surveys.



Culvert near outlet end of the Burnt Lake drainage channel in the Interlake region of Manitoba.

Rivers Water Storage Project

Construction of Rivers dam on the Minnedosa River near the town of Rivers in Manitoba began in June of 1958 following a request received from the Manitoba Government in 1956 for development of this general purpose water storage project. The total estimated cost of the structure, which is expected to take two to three years to build, is over one million dollars. Construction began in June 1958 and is now 90 % complete.



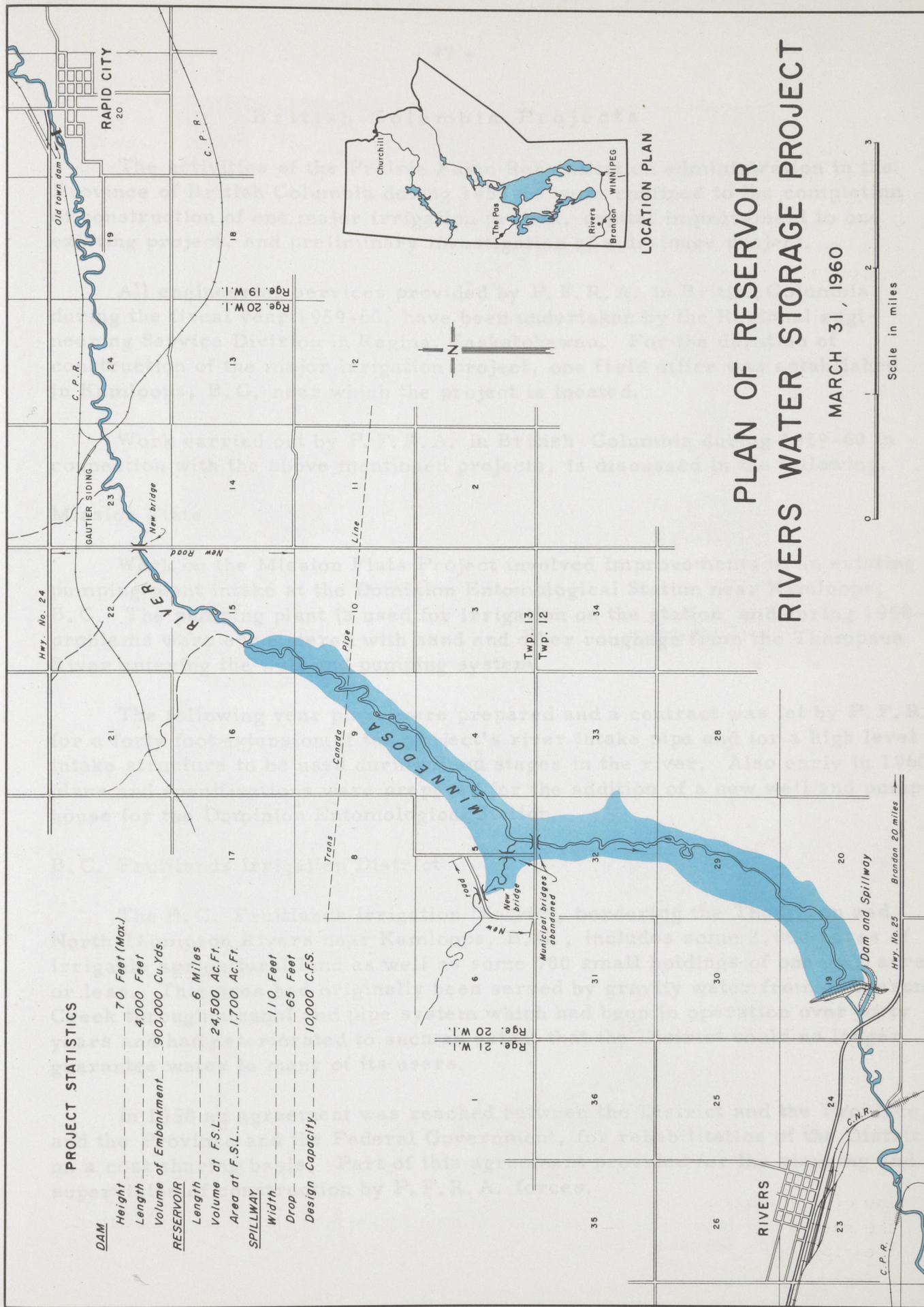
Work crews engaged in the construction of the spillway for the Rivers Water Storage Project.

Ref. No. 51957-1

The dam, which will be approximately 4,000 feet long and 75 feet high, will create a reservoir covering 1,600 acres of land and possess a storage capacity of around 25,000 acre feet of water. Located on a main tributary of the Assiniboine River, this project will provide a reliable supply of water for livestock in a large area surrounding the project which is served by the reservoir. The Rivers Project will also be of sufficient size to make water available for domestic use in nearby urban and rural areas, and in addition, assist in streamflow regulation in both the Minnedosa and Assiniboine Rivers.

Details of construction during the current fiscal year included completion of construction on the spillway, placing of approximately 75 per cent of the required fill in the embankment, and completion of about 35 per cent of the riprap.

<u>DAM</u>	
Height	70 Feet (Max.)
Length	4,000 Feet
Volume of Embankment	900,000 Cu.Yds.
<u>RESERVOIR</u>	
Length	6 Miles
Volume at F.S.L.	24,500 Ac.Ft.
Area at F.S.L.	1,700 Ac.Ft.
<u>SPILLWAY</u>	
Width	110 Feet
Drop	65 Feet
Design Capacity	10,000 C.F.S.



DEPT. OF AGRICULTURE

RIVERS WATER STORAGE PROJECT

SECTION 10



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British Columbia Projects

The activities of the Prairie Farm Rehabilitation administration in the Province of British Columbia during 1959-60 were confined to the completion of construction of one major irrigation project, capital improvement to one existing project, and preliminary investigation of a drainage project.

All engineering services provided by P. F. R. A. in British Columbia during the fiscal year 1959-60, have been undertaken by the Regional engineering Service Division in Regina, Saskatchewan. For the duration of construction of the major irrigation project, one field office was established in Kamloops, B. C. near which the project is located.

Work carried out by P. F. R. A. in British Columbia during 1959-60 in connection with the above mentioned projects, is discussed in the following.

Mission Flats

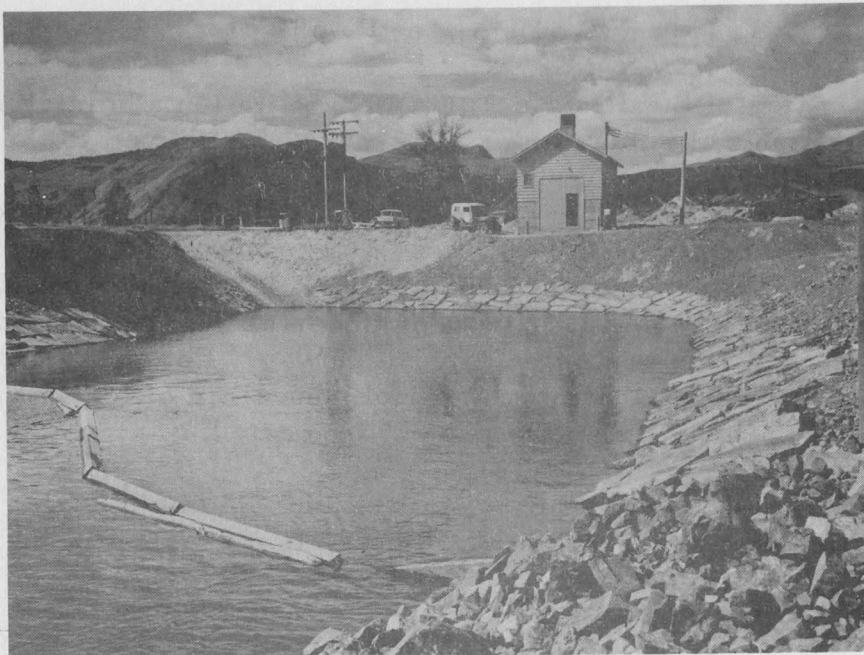
Work on the Mission Flats Project involved improvements to an existing pumping plant intake at the Dominion Entomological Station near Kamloops, B. C. The pumping plant is used for irrigation on the station and during 1958-59 problems were encountered with sand and other roughage from the Thompson River entering the well and pumping system.

The following year plans were prepared and a contract was let by P. F. R. A. for a forty foot extension of the project's river intake pipe and for a high level intake structure to be used during flood stages in the river. Also early in 1960 plans and specifications were prepared for the addition of a new well and pump-house for the Dominion Entomological Station.

B. C. Fruitlands Irrigation District

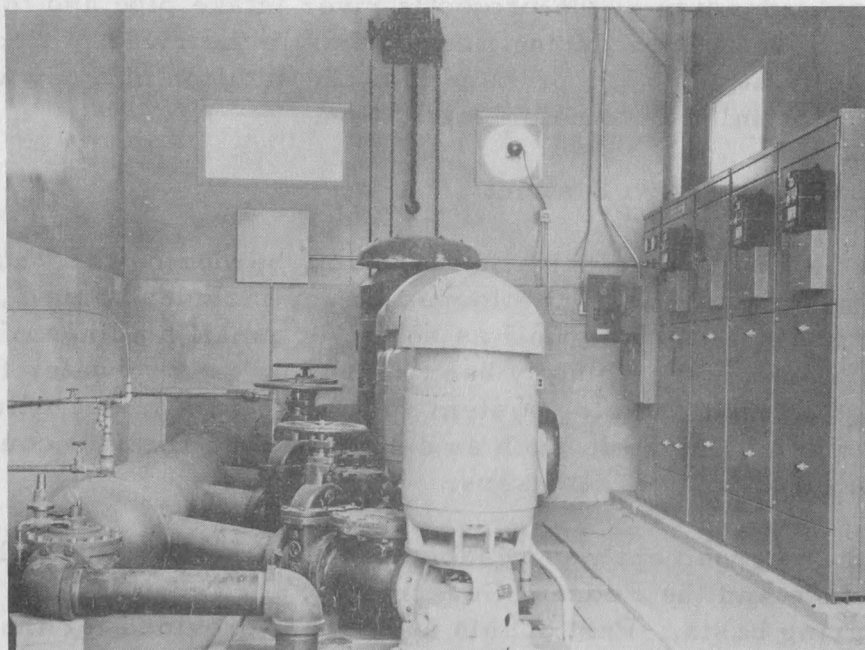
The B. C. Fruitlands Irrigation District, bordering the Thompson and North Thompson Rivers near Kamloops, B. C., includes some 2,000 acres of irrigable agricultural land as well as some 700 small holdings of one-half acre or less. This area had originally been served by gravity water from Jamieson Creek through a canal and pipe system which had been in operation over forty years and had deteriorated to such an extent that the District could no longer guarantee water to many of its users.

In 1958 an agreement was reached between the District and the Province, and the Province and the Federal Government, for rehabilitation of the District on a cost sharing basis. Part of this agreement provided for the planning and supervision of construction by P. F. R. A. forces.



High level stilling basin and pumping installation built by P.F.R.A. for the B.C. Fruitlands Irrigation district near Kamloops.

Ref. No. 18227



Inside shot of pumping installation for the B.C. Fruitlands Irrigation district.

Ref. No. 18225

The district is divided geographically into three separate areas bordering the North Thompson and Thompson Rivers. Block A, the most northerly of these areas, and the nearest to the gravity supply of Jamieson Creek, continues to receive water through the old system with some minor replacements and improvements. The remainder of the district under rehabilitation will now receive water through two large pumping plants, one on the North Thompson River and one on the Thompson River, which pump both irrigation and domestic water through closed pressure pipe systems to Blocks B and C respectively.

During the fiscal year 1959-60, construction of this project was completed by contract at an approximate total cost of \$700,000.00. An "As-Constructed" report and plans for this project were completed early in 1960 and submitted to the District for their use.

Surrey-Langley Drainage Project

The Surrey-Langley Drainage Project includes those lands bordering the Nicomekl and Serpentine Rivers near Cloverdale, B.C., which are becoming increasingly subjected to flooding from a combination of suburban development, increased drainage systems from the surrounding high lands, and tidal influence.

During the fiscal year 1959-60, a request was made by the Surrey-Langley Drainage Committee and the Province of British Columbia for P.F.R.A. assistance in preparing a preliminary report on this drainage problem. Investigations are being carried out in hydrology and other phases that will outline the problems involved, the probable chance of success of various methods of improvement to these drainage works, and the cost of any detailed surveys and planning to carry out improvements to the present works. This report is expected to be ready in May of 1960.

ENGINEERING SERVICES

To provide the basic information required for the sound planning and construction of engineering projects undertaken by P.F.R.A., a number of special divisions have been set up within the Organization under the general heading of Engineering Services.

Design Division

The main function of the Design Division is the preparation of working drawings and specifications relative to construction of engineering projects that are undertaken by P.F.R.A. For this purpose, close liaison is maintained between the Design Division, field engineers, and other Divisions of the Engineering Services Branch which provide much of the information required in such studies.

During the 1959-60 fiscal year, all work connected with the design and drafting for the South Saskatchewan River Project, was handled by the Design Division. As a result, work on this project represented approximately one-half of the total program carried out by the Division for the year. The balance of time was devoted to preliminary studies and the preparation of final plans and specifications for structures required on the P.F.R.A. and Provincial sections of the Bow River Irrigation Project, the Buffalo Pound Water Supply Project, the Emma Lake Water Conservation Project, and other water development works handled under the regular P.F.R.A. program including the Neepawa Storage Project, the Altawan Dam Project and the Davidson Storage Project.

For advice on the design of the South Saskatchewan River Dam Project, P.F.R.A. obtains the services of prominent consulting engineers. During 1959-60 these included:

Dr. K. Terzaghi,	Cambridge, Mass.	(all aspects)
Prof. A. Casagrande,	Cambridge, Mass.	(all aspects)
Mr. W. Johnson,	Omaha, Neb.	(all aspects)
Dr. L. Straub,	Minneapolis, Minn.	(hydraulics)
Prof. C. D. Smith,	Saskatoon, Sask.	(hydraulics)

Hydraulic model testing again represented an important part of the Design Division's activities for the year. This included Hydraulic model studies of the diversion tunnels and outlet works for the South Saskatchewan River Dam Project conducted at the P.F.R.A. hydraulic laboratory located in Regina, and model testing of part of the spillway for the dam, carried out at the University of Saskatchewan. In addition, hydraulic model studies were continued at the St. Anthony Falls laboratory, Minneapolis, Minnesota, on the inlets for the river diversion tunnel for the South Saskatchewan

River Dam, and on the design of the tunnels as a whole. At this laboratory a start was also made on the general design of the tunnel outlet basin.

Air Photo Analysis and Engineering Geology Division

Through the use of aerial photographs this Division provides information relative to geology, soil characteristics, topography, drainage and land use required in connection with the planning and design of P.F.R.A. water development and community pasture projects.

Since the Division was officially organized in 1952, the use of aerial photographs as an aid in engineering, agricultural and geological investigations have played an increasingly valuable part in the program of P.F.R.A. In many instances it has made it possible to effect considerable savings in time and money normally involved in field survey and exploration.

To assist in this work the Division maintains a complete library of air photos covering the larger portion of the prairie area. In addition, the Division operates two Balplex machines used for photogrammetric mapping.

Currently the Balplex machines are being employed for the mapping of the South Saskatchewan River Reservoir on the basis of five foot contour intervals. To date 118 half-sectional sheets have been produced on linen by this means, covering approximately 25 miles of reservoir upstream from the main dam. These linens are already in use for purposes of land acquisition.

Air photo reconnaissance studies during the 1959-60 fiscal year have included investigations in regard to location, geology, soils vegetation, grazing, water facilities, clearing of land, establishing management zones, fencing and access for two new proposed community pasture projects and the Arena Community Pasture, as well as location surveys for six new water development schemes. In addition, granular material searches were carried out in five general areas - Avonlea Creek, Esterhazy, Oungre, Whitesand and Wood River. Approximately ninety townships, or 3,420 square miles were examined in these areas and a total of 160 deposits were mapped.

In the field of engineering geology, foundation studies were carried out on 9 proposed damsites including the Qu'Appelle Valley Dam, South Saskatchewan River Project, the Waterton Dam, and the St. Mary Irrigation Project as well as four proposed damsites in the headwaters of the Assiniboine River and three further downstream associated with the Russell Project. Investigations were also carried out in connection with some dredging planned along a section of the Icelandic River in Manitoba where there were indications that limestone bedrock lay close to the surface in the river channel.

Hydrology Division

This Division was established for the purpose of providing basic hydrologic information for the planning, design and operation of P. F. R. A. projects. In addition, the Hydrology Division acts as the Secretariat for the Prairie Provinces Water Board for which it undertakes special studies. It also provides information for the Canadian section of certain International Engineering Boards established under the International Joint Commission.

Individual Project Studies.

Studies were carried out to evaluate flood potential or water supply or both, for a total of 42 projects in 1959.

To determine water supply, investigations generally require the reconstruction of flow records on the watershed being considered; an estimate of past, present and future water demands for the basin; and a study of storage requirements necessary to supply these demands. In many cases, projects are located in areas where there are no streamflow records. This necessitates the preliminary step of studying the relationship between rainfall and runoff for the area being studied. The results of reservoir studies are usually presented in the form of storage-draft curves which can be used by design engineers to establish the storage required to meet a variety of anticipated water demands.

Flood potential investigations for small projects are usually restricted to estimates of average daily flood peaks with a probable recurrence interval of 50 years or less.

Watershed Studies

Four watershed studies were completed during 1959. These were as follows:

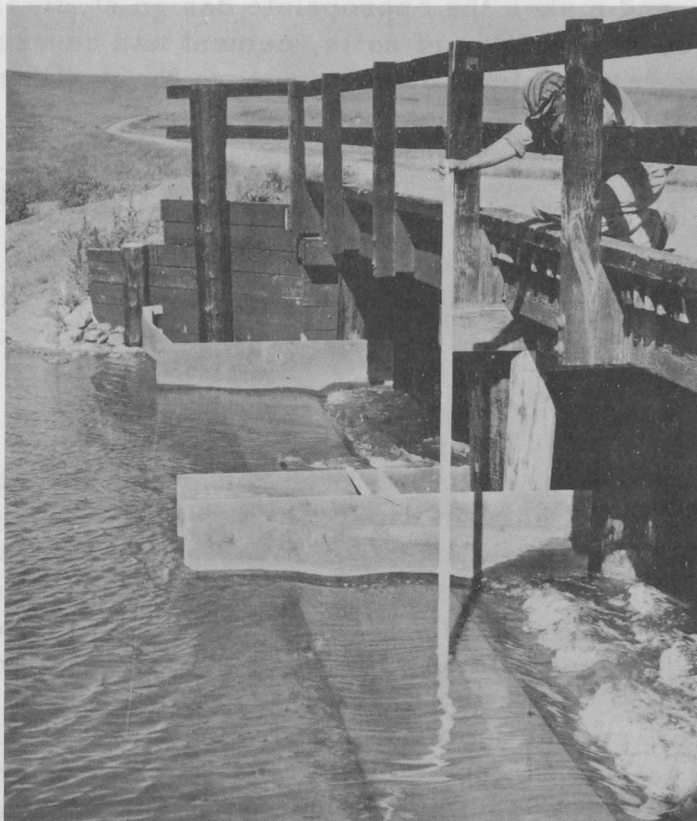
1. Hydrology of Bear Creek Watershed near Kelowna, B. C. February 1959.
2. Water Supply and Flood Control Aspects of the Upper Assiniboine River Storage Investigations - prepared jointly with the Winnipeg Regional Office.
3. Water Supply and Flood Potential of the Willow Creek Drainage Basin. July 1959.
4. Water Supply and Use on Antler, Gainsborough and Lightning Creeks. Hydrology Report #28, November 1959.

In addition to the above, the Prairie Provinces Water Board has instructed the Secretariat to prepare a preliminary report outlining the cost and scope of a study which would lead to the development of an integrated plan of development for the Saskatchewan River Basin. The preliminary report is to be completed in June of 1960.

Special Investigations

Flow records for all streams on the prairies are being studied and ultimately a report will be produced outlining the magnitude and frequency of runoff on the prairies. This report is being prepared for the Prairie Provinces Water Board. A paper entitled "The Magnitude and Frequency of Floods on the Canadian Prairies" presented by representatives of the Hydrology Division to the First Canadian Symposium on Hydrology in November 1959, defined the flood potential of streams in southern Manitoba and Saskatchewan. Work is continuing to complete a similar report for the Alberta streams rising on the eastern slopes of the Rocky Mountains.

Great rainstorms which have occurred on the prairies are being studied in order to determine the largest floods likely to occur, and the response of rivers to heavy rainfall. The results of these analyses may be used to determine flood potential more accurately at any given point on the prairies for design purposes.



Testing flow in water supply canal extending from the South Saskatchewan River to Buffalo Pound Lake, Buffalo Pound water supply project.

At the South Saskatchewan River damsite on the South Saskatchewan River, the Hydrology Division established an automatic water level recording station and 5 supplementary step gauges. Information from these gauges is being used to forecast water levels in the construction area. Other information, such as tailwater curves for the spillway, will also be developed from these records.

Observation points for water flow and water quality were also established along the upper Qu'Appelle River in 1959. The purpose of these gauges was to pinpoint conveyance losses which were occurring between Elbow and Buffalo Pound Lake. Since most of the flow in the Qu'Appelle River was pumped water from the South Saskatchewan River at Elbow, the amount and distribution of these losses and the change in water quality, is very important.

Soil Mechanics and Materials Division

The Soil Mechanics and Materials Division is required to provide technical advice on the design of dams, excavations and structure foundations. The Division is responsible for the testing of soils, cement, concrete aggregate, and other materials used for construction purposes.

To carry on these functions the Division makes detailed investigations of damsites and foundations, usually with P.F.R.A. equipment; conducts laboratory tests, analysis data, and makes the appropriate design studies. For projects under construction, control testing of soils, cement and concrete required, special test apparatus is often installed to measure the performance of dams, spillways and conduits.

Generally a report is prepared for every project investigated or special study made. Twenty-three of these reports were completed in 1959. This involved the preparation of approximately 400 engineer drawings, a little over 100 of which were in connection with the South Saskatchewan River Project, 34 the St. Mary Irrigation Project, and the remaining 250 miscellaneous smaller projects.

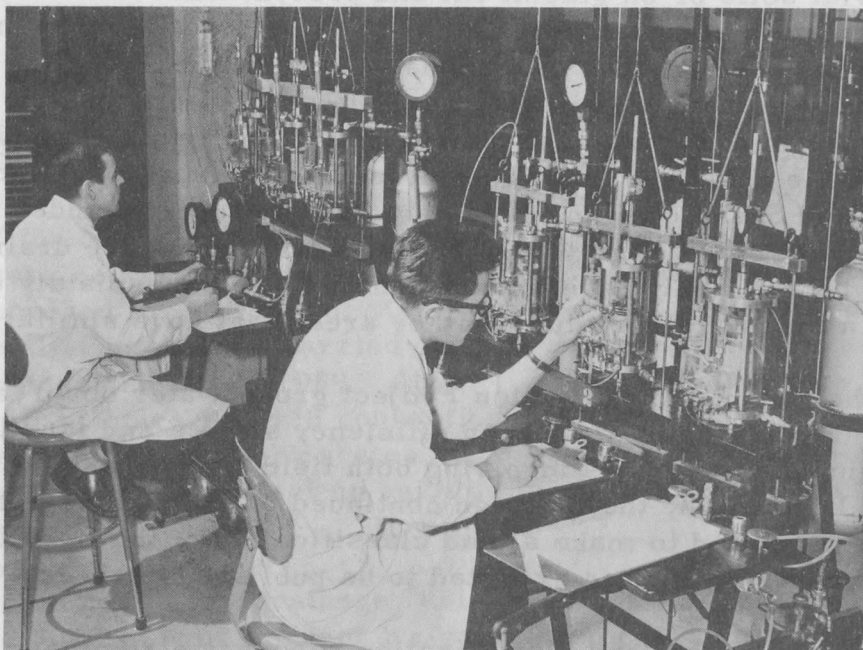
Other activities included an extensive research program to determine the best type of sulphate resistant cement to be used in concrete with special reference to the South Saskatchewan River Project where there exists high sulphate concentrations in the bedrock shale. The findings of this laboratory program are being verified by observation on concrete specimens, made with aggregate from the site and various cements which have been buried in shale at the site for up to eight years in an area known as the "cement farm".

The Drilling Department during 1959-60 worked at a total of 26 sites on 17 different projects. Over 21,500 samples were recovered from these sites and about 60,000 lineal feet of test holes were drilled. Slightly over one half the drilling and sampling was undertaken on the South Saskatchewan River



Processing heavy materials used for concrete aggregate in Soil Mechanics' laboratory aggregate testing room.

Ref. No. 21733



Technician at the Soil Mechanics' laboratory, Saskatoon operating equipment used for the determining of shear strength in soils used for construction purposes.

Ref. No. 21725

Project. An experimental program of air drilling was carried out to develop a method of drilling dry holes in the Bearpaw shale in this area.

The 1959-60 fiscal year also saw the completion of the new Soil Mechanics and Materials Building on the University Campus in Saskatoon. The office and laboratory staff and all equipment have now been moved into the new quarters. The building has been specifically designed for the type of laboratory work being carried out - e. g. it has special "fog" and "humid" rooms for the storage of concrete and soil samples, and temperature controlled cement and soil testing rooms.

Drainage Division

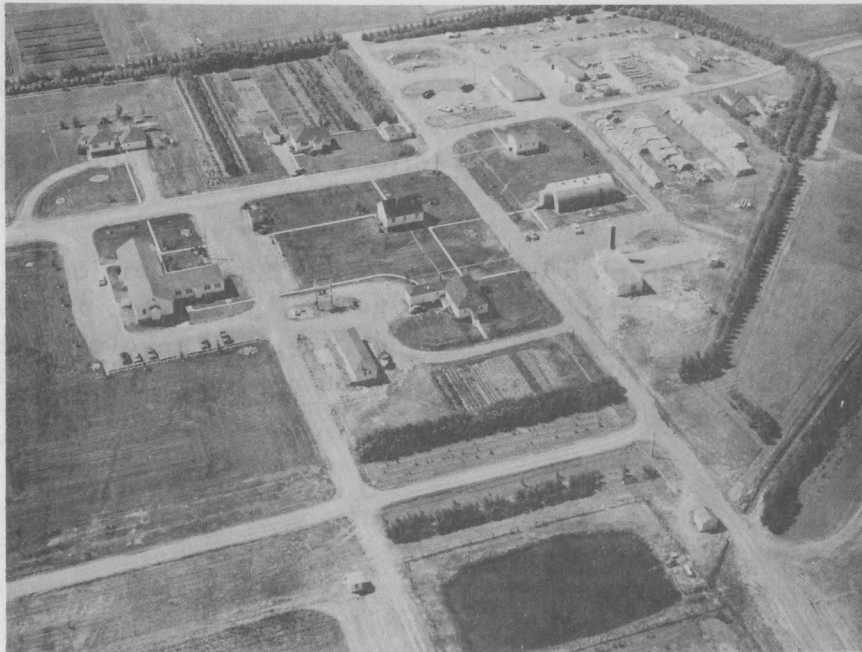
The Drainage Division of the P. F. R. A. was organized in 1949 to investigate and make recommendations for reclamation of areas that have become salinized under irrigation due to inadequate drainage. Many of these problems are complex because of the extreme variability in soil and topographic conditions.

Proper land preparation is considered to have basic importance in minimizing drainage problems. For this reason the Division has given technical assistance in land levelling to P. F. R. A. and other projects.

Many of the presently irrigated lands, however, are located on fine textured alluvial soils or on glacial till and present inherent drainage problems. Much information has been obtained by the Drainage Division in recent years, relative to the performance of various soils under irrigation. This is now being used to evaluate the suitability of the soils of proposed irrigation projects as in the case of the South Saskatchewan River Project. Standards developed are used in the economic and physical land classification of irrigation projects in Alberta and Saskatchewan. Drainage trials presently under way are yielding useful information relative to the feasibility of subsurface drainage of glacial till soils which not only have application in areas immediately under investigation, but a transferable value to other areas that have similar soil conditions.

On the Bow River Irrigation Project groundwater observations, tile drainage investigations, irrigation efficiency studies and land levelling surveys were continued during 1959 involving both field operations and laboratory analysis. In addition, the Division continued to give assistance on a joint committee appointed to make a land classification of the Bow River Project, the final report on which is expected to be published early in 1960.

Contained in the land classification report is a summary of the Drainage Division's findings pertaining to soil suitability for irrigation on the Bow River Irrigation Project as shown by salinization trends. Also included is a summary of groundwater studies, topography, and detailed physical and chemical characteristics of the soils studied.



Aerial view of Drainage Division headquarters and laboratory Vauxhall, Alberta.

Ref. No. 18010

Relating to this is the land classification work currently being undertaken on the South Saskatchewan River Project where the information obtained from the Bow River investigations is being used as a basis for the study. At the request of the Saskatchewan Department of Agriculture, the Division has provided its services in carrying out a large scale land classification survey of the area proposed for irrigation. One sterling drill crew with a soil and drainage specialist in charge, carried out soil sampling and characterization during the summer and fall of 1959. About 1,200 deep holes were drilled and some 8,000 soil samples taken in connection with this study. From the information gathered and past experience on the Bow River Project, standards of soil and topography are being set up suitable for the South Saskatchewan River Irrigation Project.

Other activities of the Drainage Division in 1959 included work in the Rush Lake area of the Swift Current Irrigation Project. This involved the evaluation of spring flood and normal methods of irrigation employed in this area, and investigations concerning high water table and salinity conditions which have proven to be a problem in certain sections of the project.

Pumping tests to reduce high water table and salinity problems in the Upper and Lower V districts of the Maple Creek Irrigation Project were also continued during the year. Results from these tests indicate that water table levels can be maintained at a safe elevation for crop production by a continuous pumping program, provided external influences can be reduced to a reasonable minimum.

In all instances samples taken by the Drainage Division in connection with its work both in Alberta and Saskatchewan, have been processed in the Drainage Laboratory at Vauxhall. During 1959, this involved the handling of approximately 14,000 soil and water samples representing over 42,000 separate laboratory determinations.

CONSTRUCTION, EQUIPMENT and SUPPLY DIVISION

This division is intended to service the diversified activities of the other branches of P.F.R.A. and maintain facilities for construction and repair of works and equipment. The division employs over 80 full time staff of whom about 40% are tradesmen in the central shops, 25% are primarily engaged in field construction, and the remaining 35% are about equally divided between plant maintenance, stores and inventory, administration and special services. Seasonal employees are required for field construction and maintenance work in varying numbers according to the volume and type of work to be done.

The main equipment depot and shop facilities are located in Moose Jaw. The carpenter shop is well equipped to do fine woodwork, build water troughs for community pastures, trailers for camp accommodation or forms for concrete work. The vehicle repair shop carried out repairs on 105 vehicles last year, many being major repair jobs. The general repair and machine shop recorded 240 different jobs, many of which were extensive overhaul jobs on tractors and construction equipment. These shops also contributed to the construction of approximately \$80,000 of new equipment including camp trailers and special equipment required by this and other divisions.

The plant maintenance staff is responsible for the operation, maintenance and security of the buildings and grounds. Members of this group also undertook 18 field jobs installing heating and plumbing in community pasture and project houses. This has become necessary because of the remote location of many of these buildings. Local contractors are not prepared to undertake these jobs at the expense of more lucrative work closer to their bases of operation. For similar reasons it has become necessary to provide some service for camp equipment used by P.F.R.A. crews throughout the area.

The basic field construction staff comprises competent construction supervisors and foremen as well as technicians and craftsmen. This staff is equipped to undertake jobs which are not ordinarily done by local contractors. Emphasis is placed on providing experienced personnel and special equipment which may be supplemented by local labour and equipment that is available. During 1959 this section worked on 73 different jobs involving a direct expenditure of about \$150,000. The jobs included timber work, repairs to concrete and steel water control structures, dredging, pipe laying, tunnelling, pile driving, land levelling, brush spraying, fireguarding and land development. This variety of field work requires many different types of equipment as well as good organization and supervision. Work crews are organized and equipped to provide as much flexibility as possible without sacrificing efficiency or the quality of the work done. A system of work orders is used for both field and shop operations which enables cost records being obtained for each job and for separate items, if such is required.

The division is responsible for purchasing procedures including vehicles, machinery, materials and repair parts. Tenders are invited from local suppliers wherever possible and are received on the basis of appropriate specifications prepared by this division according to the requirements of the equipment or material. Some classes of material are obtained for specific jobs while a supply of standard materials are retained in a revolving fund stores from which issues are charged to projects on withdrawal. The revolving fund stores serves most of P. F. R. A. from Moose Jaw, while a portion of it is allotted to the Bow River Project in Alberta.

The purchase of equipment requires that it be recorded on an inventory. A procedure is followed whereby all equipment is reported to the departmental inventory and simultaneously recorded on an operational inventory. The latter has been a necessity for some time but a major revision of the system was undertaken this year to better accommodate the nearly 6,000 items of equipment and to fit in with the departmental inventory. The present system provides a complete list of equipment of each type and a cross reference indicating present location. A similar operational record is maintained for items of engineering and office equipment and 361 vehicles.

The area served by P. F. R. A. requires movement of materials and equipment over considerable distances. A variety of truck and tractor-trailer combinations travelled over 130,000 miles last year on 544 trips transporting an estimated 3,280 tons of equipment and materials. Local commercial transport is used for some operations but it is frequently not available for the type of hauling or at the time required.

A fire prevention and safety program is carried on throughout the whole organization by an experienced and qualified supervisor. The program includes an annual inspection of all community pasture headquarters buildings and other premises occupied by P. F. R. A. personnel. Construction crew field camps are inspected regularly. Reports are submitted on each inspection and fire hazards or safety requirements are referred to the officers in charge for attention. The limited number of on-the-job accidents and no fire losses during the year indicate satisfactory results from this program.

The division has undertaken work or services for all divisions of P. F. R. A. during the year either by direct participation or providing supervision of commercial services that may be available.

PLANNING and INFORMATION DIVISION

The Planning and Information Division was established in 1949 to provide information, library and photographic services to all branches and divisions of P. F. R. A. The principal duty of the Division is to collect and assemble information pertaining to the history and development of P. F. R. A. for use in the preparation of reports, publications, articles and other material required for public distribution. Included in this work is the preparation of the P. F. R. A. Annual Report; reports on P. F. R. A. activities used in the Annual Report of the Minister of Agriculture and the Canada Year Book; reports on activities for the Deputy Minister of Agriculture, and progress and summary project reports. It is also becoming increasingly involved in news work for the organization - preparing appropriate material on P. F. R. A. activities for press, radio and TV, particularly with respect to the South Saskatchewan River Project.

A further important activity of the Division is to be responsible for arranging the itinerary and program of visitors to P. F. R. A., and handling requests for information on P. F. R. A. activities received from schools and other outside institutions, agencies and organizations. During the year several visitors, including nine Colombo Plan Students, were handled by the Division.



P.F.R.A. display used during Swift Current Exhibition, 1960 as part of publicity program carried out by the Planning and Information Division during the year.

Nearing the close of 1959-60, the Division's terms of reference were extended to include responsibility for publicity and public relations activities required by the organization with particular reference to the South Saskatchewan River Project. This involved the independent handling of news coverage required by press, radio and TV on a local level, and supplying all material required by the Information Division in Ottawa for release nationally. This represented a major departure from procedure previously followed by the Federal Department of Agriculture wherein both local and national coverage has always been handled direct from Ottawa. It is expected that these increased duties will add considerably to the work of the Division in the forthcoming year.

Library

Activities of the P. F. R. A. Library in Regina include the ordering and distribution of books, periodicals, information publications and government documents held by P. F. R. A. either in the Library in Regina or in other offices; and the filing and cataloguing of pamphlets, bulletins, reports and books in accordance with standard library procedure.

During the 1959-60 fiscal year a total of 1,077 publications were processed through the Library, 794 of which were purchased, 163 were obtained free of charge, and 120 obtained on a loan basis. In addition, the P. F. R. A. Library handled the regular circulation of approximately 220 periodicals to interested staff members in Regina and field offices.

Photo Section

The Photo Section of the Planning and Information Division provides services to all divisions and branches of P. F. R. A. and also to other Federal Government Departments in the area as required. In addition, it assumes responsibility for the care of all photographic equipment in P. F. R. A. and maintains a complete file of all P. F. R. A. black and white prints, negatives and color slides taken by the organization.

In essence this involves three major fields of work. The first concerns maintaining a complete photographic record of P. F. R. A. activities for documentary purposes. The second includes the taking and processing of pictures for publicity and public relations purposes such as illustrating reports, information bulletins and articles, etc, as well as for display purposes and to illustrate talks. The photographic reproduction of engineering drawings, plans and aerial mosaics, comprises the third service generally representing a considerable portion of the total work of the section. Another activity receiving increasing attention is the production of movies for technical, TV and general distribution purposes. It is anticipated that the production of short 3-5 minute movies in black and white for TV purposes will become a more important feature of the activities of this section in the coming year.

The quantity of work produced during 1959 continued to increase over previous years due principally to a heavy demand for documentary and publicity pictures on the South Saskatchewan River Project. In total 1,230 requests were received by the section for various types of work during the year. Included in this was the developing of 420 rolls of film, the printing of 9,538 contact pictures and production of 46,511 photographic enlargements of pictures ranging in size from 4" x 5" to 40" x 60", and the copying of 1,389 mosaics, plans and charts. About 3,000 prints and color negatives were added to the print and slide files in Regina. Also during 1959-60, approximately 7,700 feet of color and black and white movie film was shot and catalogued.

APPENDIX II

WATER DEVELOPMENT PROGRAM

DO - District		DISCOUNTS		2ND - 2nd year		3RD - 3rd year		4TH - 4th year		5TH - 5th year		6TH - 6th year		7TH - 7th year		8TH - 8th year		9TH - 9th year		10TH - 10th year		11TH - 11th year		12TH - 12th year		13TH - 13th year		14TH - 14th year		15TH - 15th year		16TH - 16th year		17TH - 17th year		18TH - 18th year		19TH - 19th year		20TH - 20th year		21TH - 21st year		22TH - 22nd year		23TH - 23rd year		24TH - 24th year		25TH - 25th year		26TH - 26th year		27TH - 27th year		28TH - 28th year		29TH - 29th year		30TH - 30th year		31TH - 31st year		32TH - 32nd year		33TH - 33rd year		34TH - 34th year		35TH - 35th year		36TH - 36th year		37TH - 37th year		38TH - 38th year		39TH - 39th year		40TH - 40th year		41TH - 41st year		42TH - 42nd year		43TH - 43rd year		44TH - 44th year		45TH - 45th year		46TH - 46th year		47TH - 47th year		48TH - 48th year		49TH - 49th year		50TH - 50th year		51TH - 51st year		52TH - 52nd year		53TH - 53rd year		54TH - 54th year		55TH - 55th year		56TH - 56th year		57TH - 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APPENDIX I

WATER DEVELOPMENT PROGRAM

Progress by Years in the Construction of Individual, Neighbor and Community Projects

Fiscal Yr.	Number of Projects Constructed				Financial Assistance Paid			
	DO	SWD	IRR	TOTAL	DO	SWD	IRR	TOTAL
*1935-46	23,158	4,573	1,032	28,763	2,469,106.61	496,711.09	173,557.12	3,139,374.82
1946-47	4,945	199	448	5,192	581,172.05	48,341.75	8,697.82	638,211.62
1947-48	1,804	241	64	2,109	202,443.78	140,601.81	90,715.57	433,761.16
1948-49	1,508	220	77	1,805	171,566.42	319,540.09	365,241.68	856,348.19
1949-50	3,031	164	123	3,318	367,392.80	214,973.66	220,242.50	802,608.96
1950-51	3,442	494	721	4,657	408,385.52	295,594.47	237,892.22	941,872.21
1951-52	478	106	350	934	60,051.14	95,488.30	171,773.19	327,312.63
1952-53	861	119	290	1,270	100,219.54	32,769.41	116,672.07	249,661.02
1953-54	1,791	190	187	2,168	227,372.12	126,415.05	209,287.59	563,074.76
1954-55	1,314	242	193	1,749	161,716.42	201,457.82	122,534.03	485,708.27
1955-56	504	159	114	777	68,141.55	78,443.87	87,547.88	234,133.30
1956-57	863	131	114	1,108	112,268.86	46,272.04	157,803.10	316,344.00
1957-58	2,218	225	155	2,598	268,273.35	143,319.23	90,787.91	502,380.49
1958-59	3,288	281	168	3,737	411,791.24	135,211.03	97,049.58	644,051.85
1959-60	3,974	259	136	4,369	820,479.90	98,981.43	70,894.59	990,355.92
TOTAL	53,179	7,603	3,772	64,554	6,430,381.30	2,474,121.05	2,220,696.85	11,125,199.20

DO - Dugout

SWD - Stockwatering Dam

IRR - Individual Irrigation Project

* - Annual figures for accumulated years may be found in previous reports

APPENDIX II

WATER DEVELOPMENT PROGRAM

Number of Individual, Neighbor, Community and Large Water Development Projects and amount of financial assistance paid from April 1, 1959 to March 31, 1960

	DUGOUTS				DAMS				IRRIGATION PROJECTS				TOTALS	
	Projects Paid	Financial Assistance Paid	Projects Paid	Financial Assistance Paid	Projects Paid	Financial Assistance Paid	Projects Paid	Financial Assistance Paid	Projects Paid	Financial Assistance Paid	Projects Paid	Financial Assistance Paid	Projects Paid	Financial Assistance Paid
MANITOBA														
Individual	550	102,819.79	8	1,740.84	10	4,965.70	568	109,526.33						
Neighbor	3	1,161.46	1	812.71	-	-	4	1,974.17						
Community	-	-	-	-	-	-	-	-						
Large Water	-	-	1	89,644.00	-	-	1	89,644.00						
Total	553	103,981.25	10	92,197.55	10	4,965.70	573	201,144.50						
SASKATCHEWAN														
Individual	2,441	470,858.95	98	12,782.02	93	35,167.45	2,632	518,808.42						
Neighbor	30	11,272.08	-	-	5	3,966.69	35	15,238.77						
Community	22	33,027.86	6	25,437.62	1	14,255.54	29	72,721.02						
Large Water	-	-	1	36,006.00	-	-	1	36,006.00						
Total	2,493	515,158.89	105	74,225.64	99	53,389.68	2,697	642,774.21						
ALBERTA														
Individual	914	170,525.48	142	18,028.02	24	9,100.58	1,080	197,654.08						
Neighbor	4	986.23	-	-	2	801.84	6	1,788.07						
Community	10	29,828.05	4	40,180.22	1	2,636.79	15	72,645.06						
Large Water	-	-	-	-	-	-	-	-						
Total	928	201,339.76	146	58,208.24	27	12,539.21	1,101	272,087.21						
GRAND TOTAL	3,974	820,479.90	261	224,631.43	136	70,894.59	4,371	1,116,005.92						

APPENDIX III

WATER DEVELOPMENT PROGRAM

Number of Individual, Neighbor, Community and Large Water Development Projects and amount of financial assistance paid from April 1, 1935 to March 31, 1960

	DUGOUTS				DAMS				IRRIGATION PROJECTS				TOTALS	
	Financial Assistance Paid		Projects Paid		Financial Assistance Paid		Projects Paid		Financial Assistance Paid		Projects Paid		Financial Assistance Paid	
	Projects Paid	Financial Assistance Paid	Projects Paid	Financial Assistance Paid	Projects Paid	Financial Assistance Paid	Projects Paid	Financial Assistance Paid	Projects Paid	Financial Assistance Paid	Projects Paid	Financial Assistance Paid	Projects Paid	Financial Assistance Paid
<u>MANITOBA</u>														
Individual	11,984	1,249,796.88	322	25,200.22	177	54,317.04	12,483	1,329,314.14						
Neighbor	59	12,309.30	15	4,496.20	8	2,212.62	82	19,018.12						
Community	6	11,030.86	23	128,169.72	2	30,582.54	31	169,783.12						
Large Water	-	-	18	1,055,965.00	6	617,217.00	24	1,673,182.00						
Total	12,049	1,273,137.04	378	1,213,831.14	193	704,329.20	12,620	3,191,297.38						
<u>SASKATCHEWAN</u>														
Individual	33,956	3,992,793.70	4,457	388,709.27	2,292	536,283.23	40,705	4,917,786.20						
Neighbor	309	81,512.40	54	11,690.94	99	43,080.09	462	136,283.43						
Community	304	250,110.20	180	959,121.46	65	633,540.08	549	1,842,771.74						
Large Water	-	-	34	2,956,399.00	35	4,079,910.00	69	7,036,309.00						
Total	34,569	4,324,416.30	4,725	4,315,920.67	2,491	5,292,813.40	41,785	13,933,150.37						
<u>ALBERTA</u>														
Individual	6,477	749,253.94	2,431	236,149.10	1,061	255,186.54	9,969	1,240,589.58						
Neighbor	41	11,787.11	13	3,318.10	15	5,033.69	69	20,138.90						
Community	43	71,786.91	108	717,266.04	53	660,461.02	204	1,449,513.97						
Large Water	-	-	4	26,632.00	18	693,004.00	22	716,636.00						
Total	6,561	832,827.96	2,556	980,365.24	1,147	1,613,685.25	10,264	3,426,878.45						
GRAND TOTAL	53,179	6,430,381.30	7,659	6,510,117.05	3,831	7,610,827.20	64,669	20,551,326.20						

**APPENDIX IV
COMMUNITY WATER STORAGE AND IRRIGATION PROJECTS
To March 31, 1960**

(Community Projects costing less than \$1,000.00 are grouped under the heading of Small Community Projects in Appendices II and III)

MANITOBA

Name of Project	Location	Type of Project	Completed	Irr. Ac.	Stor. Cap. Acre Feet	Costs
Alexander Soil Conservation	Alexander	Soil Conservation	1944	-	-	5,250.00
Birtle Dam	Birtle	Stockwatering Dam	1947	-	-	11,490.00
Boissevain	Boissevain	Storage Dam	1954	-	580	29,992.00
Brandon Flood Irrigation	Brandon	Flood Irrigation	1949	1,000	-	27,107.00
Brandon Water Supply	Brandon	Storage Dam	1940	-	500	3,996.00
Clearwater Storage	Clearwater	Stockwatering Dam	1938	-	12	5,949.00
Crystal City Storage	Crystal City	Stockwatering Dam	1935	-	3	3,334.00
Dead Lake Community	Gladstone	Irrigation	1950	20	90	1,933.00
Edwards, R.M. of	Melita	Stockwatering Dam	1935	-	100	10,214.00
Hague Dam	Sanford	Stockwatering Dam	1953	-	-	29,183.00
Hampson Dam	Sanford	Storage Dam	1954	-	420	16,899.00
Hartney	Hartney	Irrigation	1941	-	-	10,264.00
Killarney	Killarney	Multi-purpose Dam	1956	-	800	41,965.00
LaSalle River Dams	LaSalle	Stockwatering Dam	1941	-	900	22,989.00
Lewko Dam	Sanford	Storage Dam	1954	-	320	20,874.00
Little Souris River Dam	Melita	Stockwatering Dam	1945	-	250	1,380.00
Mary Jane Storage Project	Manitou	Multi-purpose Dam	1959	-	1,150	89,644.00
McAuley Community Dam	McAuley	Stockwatering Dam	1955	-	20	2,051.00
Melita	Melita	Irrigation	1941	3,900	3,200	11,372.00

Name of Project	Location	Type of Project	Completed	Irr. Ac.	Stor. Cap. Acre Feet	Costs
Minnedosa Dam	Minnedosa	Storage Dam	1950	20	1,500	105,051.00
Morden Dam (Dead Horse Creek)	Morden	Irrigation	1941	100	1,200	344,274.00
Morris River-Rock Lake	Carmen	Stockwatering Dam	1940	-	10,000	23,401.00
Napinka	Napinka	Irrigation	1941	-	-	6,770.00
Neepawa Storage Project	Neepawa	Multi-purpose Dam	Incomplete	-	3,800	299,725.00
Oak Lake	Oak Lake	Irrigation	1956	13,000	-	119,205.00
Park Lake	Neepawa	Stockwatering	1953	-	-	21,626.00
Plum Coulee	Plum Coulee	Multi-purpose Res.	1957	-	12	5,939.00
Rivers Dam	Rivers	Multi-purpose Res.	Incomplete	-	-	967,411.00
Roland	Roland	Stockwatering Dugout	1957	-	1.5	1,000.00
Rosebank Dam	Rosebank	Stockwatering	1948	-	32	12,161.00
Roseau River Dam	Dominion City	Multi-purpose Dam	1957	-	-	54,705.00
Shoal Lake Project	Shoal Lake	Stockwatering	1948	-	3,500	8,491.00
Souris Dam	Souris	Multi-purpose Dam	1952	-	150	73,597.00
Souris, Town of	Souris	Stockwatering Dam	1935	-	150	3,841.00
St. Malo Dam	St. Malo	Multi-purpose Dam	1958	-	1,770	266,937.00
St. Lazare Storage Reservoir	Lazare	Stockwatering	1948	-	5	1,470.00
Turtle Mountain Reservoir	Boissevain	Multi-purpose Res.	1956	70	600	11,968.00
Wawanesa	Wawanesa	Irrigation	1941	-	-	125,332.00
Westbourne, R.M. of	Gladstone	Stockwatering	1947	-	-	5,993.00
Whitemud River	Woodside	Stockwatering	1949	-	160	6,506.00
Whitemud River Storage	Gladstone	Stockwatering Dam	1943	-	660	11,464.00
SASKATCHEWAN						
Abbey	Abbey	Stockwatering Dugout	1958	-	1.5	1,000.00
Adair Creek	Wolseley	Multi-purpose Dam	1956	40	350	59,849.00
Adam's Lake	Battle Creek	Irrigation	1936	1,500	2,000	8,831.00

Name of Project	Location	Type of Project	Completed	Irr. Ac.	Stor. Cap. Acre Feet	Costs
Admiral Storage Dam	Admiral	Irr. & Stockwatering	1949	2,000	2,200	38,520.00
Allan	Allan	Stockwatering	1948	-	300	4,477.00
Altawan	Govenlock	Irrigation	Incomplete	-	5,830	148,461.00
Alsask	Alsask	Multi-purpose Res.	1958	-	30	9,710.00
Arcola	Arcola	Stockwatering Dam	1939	-	(underground)	17,310.00
Arena	Arena	Irr. & Stockwatering	1949	1,600	3,200	5,218.00
Arrarat	Abbey	Stockwatering Dam	1959	-	6	7,398.00
Artland Grazing	Marsden	Dugout	1955	-	1.5	1,000.00
Avon Heights Grazing Co-op.	Shanavon	Stockwatering	1955	-	60	2,428.00
Avonhurst	Qu'Appelle	Stockwatering	1956	-	1.5	3,200.00
Avonlea	Avonlea	Dugout	1959	-	3	2,170.00
Balcarres	Balcarres	Stockwatering	1948	-	100	7,203.00
Balcarres Storage	Balcarres	Stockwatering	1953	-	20	10,294.00
Bateman	Gravelbourg	Irr. & Stockwatering	1949	400	114	4,739.00
Battleford	N. Battleford	Irrigation (pump)	1941	800	-	3,058.00
Beadle	Eston	Dugout	1959	-	3	1,393.00
Beaver Creek	Hanley	Stockwatering	1951	-	200	7,998.00
Beechy #1	Beechy	Irr. & Stockwatering	1946	600	1,000	12,746.00
Beechy #2	Beechy	Irr. & Stockwatering	1948	200	100	6,240.00
Beechy Co-op.	Beechy	Stockwatering Dugout	1957	-	1.5	1,000.00
Belvoir	Glamis	Dugout	1959	-	3	1,484.00
Bengough	Bengough	Stockwatering Dugout	1957	-	1.5	1,000.00
Big Arm Storage	Liberty	Irrigation	1939	5,000	5,200	13,161.00
Black Hills Grazing Co-op.	Piapot	Dugout	1955	-	5	2,520.00
Boharm	Boharm	Stockwatering	1948	-	100	6,250.00
Bracken	Bracken	Stockwatering	1946	-	158	1,001.00
Braddock Dam	Braddock	Irrigation	1952	2,000	1,600	83,999.00
Bright Water Creek	Hanley	Irrigation	1956	2,500	3,500	11,713.00
Brown Hill Dam	Grenfell	Multi-purpose Dam	1958	-	275	99,394.00
Buffalo Pound	Qu'Appelle Valley	Irrigation	1940	x	-	83,723.00
Cabri	Cabri	Stockwatering	1948	-	340	37,553.00
Cadillac	Cadillac	Irrigation	1945	800	1,350	32,887.00
Camberly	Camberly	Irrigation & Dam	1950	-	100	2,106.00

Name of Project	Location	Type of Project	Completed	Irr. Ac.	Stor. Cap. Acre Feet	Costs	
Canora	Canora	Storage Dam	1941	-	300	16,128.00	
Caron	Caron	Storage	1948	-	100	17,109.00	
Caron Water Development	Thunder Creek	Storage Dam	1944	-	43,500	710,433.00	
Cedoux	Cedoux	Stockwatering	1947	-	314	4,999.00	
Ceylon Reservoir	Ceylon	Irrigation & Dam	1952	300	250	8,087.00	
Chapleau Lake	Montmartre	Stockwatering	1949	-	3,530	8,208.00	
Clair Creek	Wadena	Flood Irrigation	1957	100	-	1,877.00	
Claydon	Claydon	Multi-purpose Res.	1957	-	30	2,498.00	
Claydon	Claydon	Irrigation	1959	700	300	7,015.00	
Clearfield	Goodwater	Irrigation & Dam	1951	70	300	5,999.00	
Colgate	Colgate	Flood Irrigation	1958	320	-	7,110.00	
Conquest, Village of	Conquest	Dugout	1954	-	1.5	1,000.00	
Congress-Stonehenge	Limerick	Stockwatering Dugout	1958	-	2	1,000.00	
Consul-Vidora	Vidora	Irrigation	1950	3,000	-	62,500.00	
Coronach	Coronach	Irrigation & Dam	1947	300	1,450	97,807.00	
Craven Dam	Qu'Appelle Valley	Irrigation	1943	x	-	33,675.00	
Crooked & Round Lake	Qu'Appelle Valley	Irrigation	1941	x	-	48,650.00	
Cypress Storage	Ravenscrag	Irrigation	1939	20,000	80,000	467,691.00	
Coleville, Village of	Coleville	Dugout	1958	-	1.5	1,000.00	
Dalmeny	Dalmeny	Stockwatering	1951	-	3	1,000.00	
Davidson	Davidson	Irrigation	1937	100	277	3,114.00	
Davidson Storage Project	Davidson	Multi-purpose Dam	1959	-	400	36,006.00	
Davin	Kronau	Stockwatering	1947	-	1,080	13,501.00	
Dead Lake	Macoun	Irrigation	1941	Souris River Development			17,528.00
Delisle	Delisle	Stockwatering	1950	-	45	4,899.00	
Dixon Lake	Spring Valley	Irrigation	1959	500	2,500	13,951.00	
Doonside Dam	Wawota	Irrigation	1955	1,500	1,500	3,438.00	
Downey Lake	Maple Creek	Stockwatering Dam	1958	-	58	1,404.00	
Dry Coulee	Eastend	Stockwatering Dam	1958	-	10	1,605.00	
Dry Lake	Forward	Stockwatering	1949	-	600	9,729.00	
Dunn & Watt	Mankota	Irrigation	1937	305	-	2,996.00	
Dunning	Radville	Irrigation	1951	120	200	3,566.00	
Dummer	Milestone	Irrigation & Dam	1949	500	200	4,742.00	
Dodsland	Druid	Dugout	1958	-	1.5	1,000.00	

Name of Project	Location	Type of Project	Completed	Irr. Ac.	Stor. Cap. Acre Feet	Costs
Eagle Hill Creek	Plenty	Stockwatering	1946	-	10,700	6,432.00
Eagle Lake	Coleville	Irrigation & Dam	1949	2,000	3,000	5,998.00
Eastend	Eastend	Irrigation	1939	4,000	1,300	161,682.00
Eastview	Eastview	Stockwatering	1949	-	200	5,970.00
Eatonia	Eatonia	Stockwatering	1949	-	12	1,199.00
Echo Lake	Qu'Appelle Valley	Irrigation	1943	x	-	41,753.00
Egg Lake	Avonhurst	Multi-purpose Res.	1957	800	-	10,047.00
Elfros	Elfros	Stockwatering	1949	-	25	7,330.00
Emerald Hill	Milestone	Stockwatering	1958	-	250	7,582.00
Eston	Eston	Stockwatering	1954	-	10	11,469.00
Fahlman's Creek Project	Balgonie	Stockwatering	1949	-	400	15,599.00
Fairy Hill	Qu'Appelle Valley	Irrigation	1941	x	-	4,302.00
Fife Lake Restoration	Constance	Irrigation & Dam	1954	1,200	-	9,596.00
Fife Lake #2	Constance	Irrigation & Dam	1954	650	-	6,348.00
Fillmore	Fillmore	Stockwatering Dugout	1958	-	1.5	1,000.00
Fleming	Moosomin	Stockwatering	1950	-	75	3,282.00
Foam Lake (Elfros)	Foam Lake	Irrigation	1957	4,000	-	11,964.00
Francis Lake	Morse	Irrigation	1956	1,560	-	17,305.00
Frenchman Flats	Dundurn	Irrigation	1949	1,800	2,800	9,996.00
Frenchville	Frenchville	Irrigation & Dam	1947	430	670	8,096.00
Gibson Flats	Pennant	Irrigation	1953	1,200	-	14,177.00
Girvin	Girvin	Stockwatering Dam	1937	-	19	2,180.00
Glenside	Glenside	Stockwatering	1948	-	150	3,286.00
Glidden, Village of	Glidden	Dugout	1959	-	3	1,200.00
Gooseberry Lake	Corning	Stockwatering	1948	-	2,500	8,783.00
Gouverneur Dam	Ponteix	Irrigation	1952	6,000	10,000	242,468.00
Graham-Rogers	Qu'Appelle	Irrigation	1959	140	-	2,463.00
Grattle Grazing Co-op.	Hoosier	Dugout	Incomplete	-	3	951.00
Gravelbourg South	Gravelbourg	Irrigation	1948	600	1,500	8,186.00
Gravelbourg Storage	Gravelbourg	Irrigation	1947	500	-	1,917.00
Grosnick	Lake Alma	Stockwatering Dugout	1957	-	1.5	1,000.00
Gunn Grazing Co-op.	Shaunavon	Multi-purpose Res.	1957	-	10	1,632.00

Name of Project	Location	Type of Project	Completed	Irr. Ac.	Stor. Cap. Acre Feet	Costs
Hague Dugout	Hague	Stockwatering	1950	-	2	1,000.00
Hodgeville	Hodgeville	Stockwatering	1949	-	5	2,748.00
Hanley	Hanley	Stockwatering	1946	-	60	3,797.00
Harris Reservoir	Maple Creek	Irrigation	1956	1,000	5,000	238,074.00
Haunted Hills Grazing Co-op.	Moose Jaw	Stockwatering Dam	1959	-	10	1,640.00
Hoosier, Hamlet of	Hoosier	Dugout	1959	-	3	1,190.00
Hugonard Coulee Dam	Lebret	Multi-purpose Dam	1956	100	400	64,231.00
Jackfish Creek	Meota	Stockwatering Dam	1943	-	90	2,940.00
Jumping Deer Creek	Lipton	Stockwatering	1947	-	145	6,092.00
Kaposvar	Stockholm	Stockwatering	1947	-	290	11,946.00
Kaposvar Creek	Melville	Stockwatering Dam	1954	-	1,400	102,747.00
Katepwa Weir	Katepwa	Dam	1957	-	-	61,192.00
Kelfield	Kelfield	Stockwatering	1947	-	25	4,927.00
Kerrobot	Kerrobot	Multi-purpose Res.	1957	-	40	11,554.00
Kincaid	Kincaid	Stockwatering	1956	-	10	2,539.00
Kindersley	Kindersley	Stockwatering	1949	-	300	2,007.00
Kisbey Flats	Kisbey	Irrigation	1939	2,300	5,000	23,211.00
Koch-Froh	Qu'Appelle	Multi-purpose Res.	1956	160	-	2,390.00
Lac Pelletier	Lac Pelletier	Stockwatering Dam	1937	-	3,350	2,139.00
Lacadena	Lacadena	Irrigation	1954	-	-	9,678.00
Lafleche	Lafleche	Stockwatering Dam	1940	-	38	2,524.00
Lafleche Dam	Lafleche	Multi-purpose Dam	1957	15,000	30,120	627,922.00
Lajord	Lajord	Dam	1936	-	300	13,800.00
Lake of the Rivers	Assiniboia	Stockwatering Dam	1938	-	300	10,805.00
Lancer Water Users	Lancer	Irrigation	1953	1,265	-	35,000.00
Langenburg	Langenburg	Irrigation & Dam	1949	800	200	11,752.00
Langenburg	Langenburg	Irrigation	1954	-	2.5	3,000.00
Larsen	Radville	Multi-purpose Dam	1957	-	500	36,437.00
Last Mountain Lake	Qu'Appelle Valley	Irrigation	1941	x	-	42,721.00
Lebret	Qu'Appelle Valley	Irrigation	1941	x	-	16,307.00
Lemsford	Lemsford	Stockwatering Dugout	1957	-	1.5	1,000.00
Little Manitou Lake	Watrous	Dam	1957	-	-	39,271.00

Name of Project	Location	Type of Project	Completed	Irr. Ac.	Stor. Cap. Acre Feet	Costs
Lonesome Lake	Vidora	Irrigation	1949	900	800	2,771.00
Long Creek #1	Estevan	Stockwatering Dam	1938	-	137	8,729.00
Long Creek #2	Estevan	Stockwatering Dam	1938	-	90	8,701.00
Loon Creek	Markinch	Stockwatering Dam	1945	-	700	7,180.00
Lucky Lake	Lucky Lake	Stockwatering	1946	-	120	7,596.00
McIntosh Slough	Golden Prairie	Irrigation	1949	500	1,500	1,990.00
Macklin Storage	Macklin	Stockwatering	Incomplete	-	40	967.00
Maple Creek	Maple Creek	Irrigation	1938	10,000	23,260	356,179.00
Maple Grove	Goodwater	Dam	1959	-	330	5,988.00
March Flood Irrigation	Cedoux	Irrigation	1948	400	-	1,765.00
Masefield	Masefield	Stockwatering	1938	-	40	3,187.00
Masefield Water Users	Masefield	Multi-purpose Dam	1957	500	250	7,999.00
Matador	Matador	Irrigation & Dam	1946	120	220	5,216.00
Maymont	Maymont	Dugout	1959	-	1.5	1,200.00
Maxim Lake	Maxim	Stockwatering	1949	-	5,000	20,472.00
McCreaney, R.M. of	Kenaston	Stockwatering Dam	1937	-	350	1,896.00
McDonald Creek	McCord	Irrigation & Dam	1950	400	90	4,992.00
McGurk Lake	Carlyle	Dam	Incomplete	-	800	1,846.00
Meadowland	Macklin	Irrigation	1954	500	-	6,370.00
Meeting Lake	Redfield	Stockwatering	1949	-	100	2,683.00
Melaval	Melaval	Stockwatering	1950	-	18	1,200.00
Meota, R.M. of	Meota	Dugout	1953	-	1.5	1,000.00
Middle Creek	Battle Creek	Irrigation	1937	1,000	20,000	18,663.00
Mine Coulee	Neptune	Stockwatering	1948	-	40	4,377.00
Miry Creek, R.M. of	Abbey	Dam	Incomplete	-	20	4,680.00
Montague Lake	Assiniboia	Irrigation	1953	235	-	1,000.00
Moose Jaw Creek	Lang	Irrigation	1938	2,250	2,180	7,618.00
Moose Mountain	Corning	Irrigation	1937	-	8,000	14,829.00
Moosomin Dam (Keenan Bridge)	Moosomin	Multi-purpose Dam	1954	-	9,000	449,184.00
Muenster	Muenster	Irrigation	1949	25	11	2,754.00
Neudorf	Neudorf	Multi-purpose Res.	1958	-	-	1,790.00
Newburn Lake	Invermay	Irrigation & Dam	1952	50	1,280	6,477.00
North Hebert Extension	Herbert	Irrigation	Incomplete	-	-	511,909.00

Name of Project	Location	Type of Project	Completed	Irr. Ac.	Stor. Cap. Acre Feet	Costs
North Portal	North Portal	Dugout	1959	-	2	1,810.00
North Qu'Appelle	Fort Qu'Appelle	Stockwatering Dam	1948	-	100	2,386.00
Orkney	Orkney	Stockwatering Dam	1958	-	10	1,982.00
Oxbow Dam	Oxbow	Irrigation	1941	3,900	3,200	17,436.00
Pangman	Pangman	Multi-purpose Res.	1957	30	125	5,533.00
Pasqua	Moose Jaw	Stockwatering	1948	-	40	3,777.00
Pike Lake	Vanscoy	Irrigation & Dam	1948	900	2,500	7,360.00
Pipestone Lake	Broadview	Stockwatering Dam	1938	-	1,600	11,785.00
Pheasant Creek	Lemberg	Storage	1954	-	500	114,464.00
Poplar River	Coronach	Irrigation & Dam	1950	300	900	14,838.00
Portreeve	Portreeve	Stockwatering Dugout	1957	-	1.5	1,000.00
Primate	Primate	Stockwatering Dugout	1957	-	1.5	1,000.00
Radville	Radville	Stockwatering	1947	-	32	5,019.00
Reciprocity	Glen Ewen	Irrigation & Dam	1949	2,000	1,750	27,410.00
Redford	Wilkie	Stockwatering	1951	-	160	1,814.00
Richman Irrigation	Glen Bain	Irrigation	1949	-	1,000	4,607.00
Richardson-McKinnon	Consul	Irrigation	1946	3,000	-	53,913.00
Ridgeway Flats	Qu'Appelle	Multi-purpose	1957	65	80	2,054.00
Rinfret	Weyburn	Dugout	1959	-	6	6,997.00
Rockglen Grazing	Rockglen	Irrigation & Dam	1955	600	300	13,455.00
Rosedale	Hanley	Irrigation	1948	60	100	1,016.00
Rosthern Water Storage	Rosthern	Storage Dam	1958	-	160	22,613.00
Rough Bark Creek	Goodwater	Stockwatering Dam	1937	-	1,500	9,314.00
Round Hill Water Users	N. Battleford	Irrigation & Dam	1950	425	50	4,791.00
Ruddell, Village of	Ruddell	Dugout	1959	-	1.5	1,000.00
Russell Creek	Pambrun	Irrigation	1951	1,000	2,000	66,493.00
Saline	Invermay	Multi-purpose Res.	1958	1,000	-	2,377.00
Salvador	Reward	Stockwatering	1951	-	5	1,000.00
Saskatoon	Saskatoon	Storage Dam	1940	-	1,200	290,446.00
Sauder	Rush Lake	Storage & Irrigation	1949	-	800	29,115.00
Scotsguard	Scotsguard	Irrigation & Dam	1949	2,000	3,000	1,962.00

Name of Project	Location	Type of Project	Completed	Irr. Ac.	Stor. Cap. Acre Feet	Costs
Scotsguard	Shaunavon	Stockwatering Dugout	1958	-	3	1,857.00
Shaheen	Rush Lake	Storage & Irrigation	1949	-	300	9,028.00
Shackleton, Village of	Shackleton	Dugout	1959	-	1.5	1,500.00
Shrimp Lake	Herschel	Stockwatering	1947	-	450	9,367.00
Sinfield	Kelvington	Multi-purpose Res.	1957	10	-	3,177.00
Skyeta, Com.	Springside	Dam	1959	-	15	3,885.00
Sioux Reserve	Fort Qu'Appelle	Stockwatering	1949	-	75	8,605.00
Smiley, Village of	Smiley	Dugout	1949	-	1.5	1,000.00
Smiley	Smiley	Irrigation & Dam	1951	600	300	9,998.00
Snake Bite	Beechy	Irrigation	1954	665	-	9,999.00
Snipe Lake	Eston	Stockwatering	1949	-	-	3,415.00
Snowdown Grazing Co-op	Fox Valley	Dugout	1959	-	1.5	1,898.00
Souris-Estevan	Estevan	Irrigation	1941	-	-	91,133.00
Souris River	Weyburn	Flood Control	1948	-	-	11,998.00
South Abernethy Project	Abernethy	Irrigation	1956	320	-	14,568.00
Spangler Project	Govenlock	Irrigation	1948	1,500	2,100	4,950.00
Stelcam Community Dam	Stelcam	Stockwatering	1956	-	360	9,791.00
Stephens Dam	Abernethy	Stockwatering	1948	-	12	8,716.00
Sturgis Community Dam	Sturgis	Stockwatering	1950	-	60	20,961.00
Summerberry	Summerberry	Multi-purpose Res.	1956	427	-	6,824.00
Summercove	Mankota	Irrigation & Dam	1949	1,200	1,500	23,837.00
Summit Creek	Bridgeford	Irrigation & Dam	1949	800	3,000	13,227.00
Sunbeam Creek	Indian Head	Multi-purpose Res.	1957	100	300	5,216.00
Swift Current	Swift Current	Irrigation	1946	30,000	95,000	816,472.00
Talmage	Cedoux	Irrigation	1948	1,600	-	3,483.00
Tantallon	Tantallon	Stockwatering Dam	1942	-	-	2,790.00
Tatagwa Lake	Weyburn	Flood Irrigation	1958	10,000	-	28,840.00
Terrell, R.M. of	Spring Valley	Stockwatering	1952	-	10	2,491.00
Thunder Creek	Kettlehut	Flood Irrigation	1948	-	-	27,204.00
Thunder Creek Channel	Moose Jaw	Irrigation & Dam	1951	300	7,000	10,007.00
Tilney	Tilney	Multi-purpose Res.	1958	-	100	8,308.00
Tribune Dam	Tribune	Stockwatering	1950	-	300	6,499.00
Truax	Truax	Stockwatering	1949	-	250	11,899.00
Tuxford	Tuxford	Flood Irrigation	1957	800	-	7,320.00

Name of Project	Location	Type of Project	Completed	Irr. Ac.	Stor. Cap. Acre Feet	Costs
Twelve Mile Lake Tyvan	Maxstone Tyvan	Flood Irrigation Stockwatering	1956 1947	- -	- 1,000	7,998.00 11,986.00
Val Marie	Val Marie	Irrigation	1937	5,920	7,000	214,558.00
Val Marie West (including new spillway 1959)	Val Marie	Irrigation	1940	4,230	2,000	321,586.00
Valeport Dyke	Valeport	Dam	1958	1,500	-	139,748.00
Valley Park Irrigation	Valley Lake	Irrigation	1949	1,200	-	8,133.00
Verwood	Verwood	Stockwatering Dam	1958	-	16	1,414.00
Weed Creek	Broadview	Flood Irrigation	1958	2,000	-	3,099.00
West Osage	Cedoux	Irrigation & Dam	1949	300	600	4,905.00
West Poplar #1	Kildeer	Multi-purpose Res.	1957	750	1,000	16,230.00
Weyburn	Weyburn	Irrigation	1940	-	4,000	51,311.00
Wheatlands, R.M. of	Parkbeg	Irrigation & Dam	1951	100	60	3,452.00
White Gull Lake	Gull Lake	Flood Irrigation	1958	263	-	1,743.00
Wilson Lake	Lizard Lake	Multi-purpose Res.	1956	400	-	2,813.00
Wittrock	Hodgeville	Irrigation	1947	520	-	3,884.00
Wolseley	Wolseley	Stockwatering	1948	-	20	1,800.00
Wolverine Creek	Humboldt	Stockwatering Dam	1945	-	522	52,600.00
Wood Mountain	Willow Bunch	Irrigation & Dam	1951	40	60	6,337.00
Woodrow - Pinto Creek	Woodrow	Irrigation	1949	1,000	1,400	41,982.00
Wood River Development	Coderre and Gravelbourg	Stockwatering Dam	1942	-	4,923	33,738.00
Wynn Community Project	Wolseley	Multi-purpose Res.	1957	500	-	3,152.00
Wynyard	Wynyard	Stockwatering	1947	-	35	6,225.00
Young	Young	Stockwatering	1948	-	250	8,892.00

x - Ultimate irrigation development for all projects along Qu'appelle
River Valley 30,000 - (total storage capacity - 95,600 acre feet).

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Name of Project	Location	Type of Project	Completed	Irr. Ac.	Stor. Cap. Acre Feet	Costs
Acadia Valley	Acadia Valley	Dugout	1953	-	1.5	2,252.00
Acadia Valley #2	Acadia Valley	Dugout	1954	-	1.5	1,000.00
Aetna Irrigation District	Aetna	Irrigation	1947	8,000	-	82,004.00
Airdree	Calgary	Multi-purpose Res.	1958	-	200	9,789.00
Ambrose Flats	Irvine	Irrigation	1951	800	1,000	4,781.00
Anatole	Hanna	Stockwatering	1953	-	7	2,990.00
Antelope Park	Nemiscam	Stockwatering Dugout	1957	-	1.5	1,000.00
Argyle, M.D. of	Staveley	Stockwatering	1949	-	80	10,912.00
Atlee Gas Well #1	Atlee	Irrigation (pump)	1939	7,000	-	12,423.00
Atlee Gas Well #2	Atlee	Irrigation (pump)	1939	-	-	14,300.00
Atlee Buffalo	Atlee	Dugout	1959	-	9	5,700.00
Badger Lake	Lomond	Stockwatering	1948	-	10	2,990.00
Bain Community	Foremost	Dugout	1959	-	10.5	6,800.00
Balzac	Balzac	Irrigation	1956	900	-	8,141.00
Bare Creek	Comrey	Irrigation & Dam	1950	-	500	11,600.00
Bare Creek #2	Comrey	Multi-purpose Dam	1956	1,000	1,100	13,029.00
Bartman Dam	Cessford	Irrigation	1943	1,000	3,000	49,100.00
Beautyland	Bindloss	Dugout	1959	-	6	1,500.00
Beauvais Lake	Pincher Creek	Irrigation	1950	2,000	2,400	15,996.00
Beaver Dam Creek Reservoir	Castor	Stockwatering	1950	-	300	17,996.00
Bedford Slough	Medicine Hat	Irrigation	Incomplete	3,000	200	35,493.00
Bell Lake	Pollockville	Irrigation	1949	700	1,500	4,738.00
Berry Creek	Carolside	Irrigation	1948	10,000	30,000	158,884.00
Bircham	Calgary	Flood Irrigation	1958	1,200	-	8,295.00
Bluefield Grazing Assoc.	Thelma	Stockwatering	1956	-	30	3,500.00
Bowell	Bowell	Dugout	1954	-	1.5	1,000.00
Bow Island	Bow Island	Stockwatering Dam	1958	-	1.5	1,000.00
Bowmanton	Bowmanton	Stockwatering	1953	-	500	14,860.00
Brunswick Coulee	Enchant	Irrigation	1949	500	205	4,631.00
B.T. Grazing Co-op.	Hilda	Stockwatering	1956	-	3	1,000.00
Bull Pound Creek	Hanna	Stockwatering Dam	1939	-	2,000	-

Name of Project	Location	Type of Project	Completed	Irr. Ac.	Stor. Cap. Acre Feet	Costs
Bullshead Creek	Medicine Hat	Irrigation	1940	800	1,130	8,170.00
Burke Creek	Claresholm	Stockwatering Dugout	1957	-	6	3,890.00
Burm's Creek	Burm's	Multi-purpose Res.	1957	550	250	14,683.00
Cameron	Youngstown	Multi-purpose Dam	1957	662	1,000	3,905.00
*Canada Land & Irrig. Project	Medicine Hat	Irrigation	1936	45,000	-	80,000.00
Caranova	Bowell	Multi-purpose Res.	1957	500	250	8,199.00
Carbon	Carbon	Multi-purpose Res.	1957	300	50	8,958.00
Champion	Champion	Irrigation	1954	2,500	-	4,984.00
Chipman Creek	Burm's	Flood Irrigation	1957	700	-	3,298.00
Clear Lake	High River	Stockwatering	1948	-	10,000	35,000.00
Collins	Sheerness	Stockwatering Res.	1956	-	40	3,495.00
Commodore	Vulcan	Irrigation	1954	400	-	3,990.00
Comrey Grazing	Comrey	Dugout	1953	-	1.5	1,000.00
Conrich	West Calgary	Irrigation	1954	1,600	-	6,240.00
Consort	Hanna	Stockwatering	1955	-	20	9,651.00
Coutes Community Project	Coutes	Stockwatering Dam	1959	-	15	7,743.00
Cowley Community	Cowley	Irrigation	1952	750	-	4,666.00
Craigmyle	Craigmyle	Multi-purpose Dugout	1958	-	1.5	1,000.00
Cressday	Medicine Hat	Stockwatering	1954	-	-	13,541.00
Crowfoot	Gleichen	Multi-purpose Res.	1958	-	110	3,576.00
Cutbank Coulee	Cressday	Stockwatering Res.	1956	350	500	2,337.00
C.Y. Water Users	Taber	Stockwatering	1949	-	310	16,477.00
Cypress View	Irvine	Multi-purpose Res.	1958	-	300	11,336.00
D'Arcy	Hanna	Multi-purpose Res.	1957	-	15	2,116.00
Dead Fish Creek	Cessford	Irrigation	1949	4,000	5,000	47,832.00
Del Bonita	Twin River	Stockwatering	1955	-	250	9,196.00
Delia	Morrin	Stockwatering	1955	-	165	3,914.00
Drowning Ford	Vale	2 Dugouts & Dam	1953	-	100	4,368.00
East Berry Creek	Roselynn	Irrigation	1949	1,500	750	9,677.00
East Trout Creek	Stavely	Stockwatering Dam	1958	-	8	3,446.00
*Eastern Irrigation District	Brooks	Irrigation	1937	2,280	22,000	22,490.00

Name of Project	Location	Type of Project	Completed	Irr. Ac.	Stor. Cap. Acre Feet	Costs
Eastern Irrigation District (Antelope Coulee)	Brooks	Irrigation	Incomplete	-	-	35,793.00
Esler	Hanna	Stockwatering	1954	-	17	2,808.00
Esther Flood Irrigation	Macklin	Irrigation	1952	4,000	5,000	4,592.00
Eureka Irrigation Project	Grassy Lake	Irrigation	1949	12,000	1,000	38,568.00
Fenn	Stettler	Stockwatering Dam	1959	-	35	1,400.00
Fish Lake	Pincher Creek	Irrigation & Dam	1954	1,000	-	6,895.00
Franklin Coulee	Retlaw	Stockwatering	1948	-	1,500	20,125.00
Garden Plains	Sponden	Stockwatering Dugout	1956	-	6	1,596.00
Graham Creek	Calgary	Stockwatering Dam	1943	-	230	8,529.00
Granlea Community	Granlea	Stockwatering Dam	1959	-	725	12,853.00
Grainger	Three Hills	Multi-purpose Res.	1956	30	117	9,482.00
Greasewood Coulee	Manyberries	Irrigation & Dam	1954	500	650	9,798.00
Halkirk Com.	Halkirk	Irrigation	Incomplete	303	-	2,637.00
Hampton	Youngstown	Multi-purpose Res.	1957	2,000	401	8,000.00
Hanna	Hanna	Stockwatering	1948	-	500	29,498.00
Heath Creek	Northfork	Stockwatering Dam	1958	-	12	3,848.00
Hilda Community Project	Hilda	Multi-purpose Dugout	1957	-	10	5,180.00
Huber Dam	Castor	Stockwatering Dam	1959	-	112	3,068.00
Illingsworth	Bow Island	Dugout	1954	-	1.5	1,000.00
Indian Farm Creek	Pincher Creek	Irrigation & Dam	1953	600	500	4,795.00
Indus Community Project	Conrich	Irrigation	1955	1,220	-	9,843.00
Irvine	Irvine	Irrigation & Dam	1950	70	100	4,799.00
Jaydot	Elkwater	Multi-purpose Res.	1956	300	400	8,988.00
Kathryn	Calgary	Irrigation & Dam	1954	300	-	9,184.00
Lake Valley	Bowell	Stockwatering Dugout	1957	-	1.5	1,000.00
Leavitt Irrigation	Mountain View	Irrigation	1939	7,000	7,050	65,578.00

Name of Project	Location	Type of Project	Completed	Irr. Ac.	Stor. Cap. Acre Feet	Costs
Lewis	Vulcan	Irrigation & Dam	1953	350	-	4,345.00
Lochend Lake	Calgary	Dam & Irrigation	1958	1,600	1,100	7,750.00
Lomand	Lomand	Dugout	1959	-	3	1,000.00
Loveland	Hanna	Irrigation	1954	3,000	-	17,655.00
Loyalist Creek	Hanna	Irrigation	1950	2,000	1,400	14,993.00
Lundbreck	Pincher Creek	Stockwatering	1953	-	100	4,689.00
McArthur	Walsh	Dam	1959	-	700	14,565.00
McAlpine Reservoir	Walsh	Irrigation	1951	600	1,000	15,917.00
McGregor Dam	Vulcan	Irrigation	1951	1,500	700	9,473.00
McLaren	Michichi	Multi-purpose Res.	1957	150	660	13,815.00
Mackay Dam	Walsh	Irrigation	1952	600	300	9,600.00
#Magrath	Magrath	Irrigation	1939	4,000	-	2,756.00
Meadow Creek Dam	Claresholm	Irrigation	1952	1,500	-	5,630.00
Mekastoe	Fort MacLeod	Dam	1959	-	210	4,594.00
Michelle Creek Project	Thelma	Multi-purpose Res.	1959	-	800	14,791.00
Milne Community Project	Conrich	Irrigation	1955	1,300	-	9,644.00
Mountain View	Mountain View	Storage Dam	1936	-	4,200	3,000.00
Natismith	Youngstown	Multi-purpose Res.	1956	300	145	9,421.00
Nemiscam	Etzikom	Dugout	1954	-	1.5	1,000.00
Nester	Cessford	Multi-purpose Res.	1957	300	1,350	8,670.00
New Brigden	Hanna	Stockwatering Dam	1958	-	60	3,582.00
Nobleford Water Users	Nobleford	2 Dugouts	1953	-	3	11,173.00
North Fincastle	Taber	Irrigation & Dam	1948	2,000	4,000	17,943.00
Osborne Water Conservation	Idlesleigh	Dam	1959	-	210	9,495.00
Oyen	Oyen	Stockwatering Dugout	1957	-	1.5	1,000.00
Parfles	Chancellor	Irrigation	1954	250	-	4,730.00
Peace Butte Reservoir	Peace Butte	Stockwatering	1955	450	550	8,993.00
Pershing Dam	Glenwood	Irrigation	1951	100	200	4,782.00
Pirmez Creek	Pirmez Creek	Irrigation	1951	6,000	500	20,998.00
Porcupine Hills	Fort MacLeod	Dugout	1959	-	1.5	4,599.00
Pothole Coulee	Magrath	Irrigation	1948	Part of St. Mary Project		
Priddis	High River	Stockwatering	1955	-	312	8,802.00

Name of Project	Location	Type of Project	Completed	Irr. Ac.	Stor. Cap. Acre Feet	Costs
Provost, Village of	Provost	Multi-purpose Dam	1956	-	3	4,812.00
Ranchville Community Res.	Ranchville	Irrigation	1957	300	-	4,950.00
*Raymond	Raymond	Irrigation	1943	3,000	1,600	6,000.00
Reid Hill	Vulcan	Irrigation	1952	1,000	700	8,866.00
Rock Lake Project	Brooks	Irrigation	1957	11,000	-	133,984.00
*Rolling Hills	Rolling Hills	Irrigation	1938	25,000	-	46,839.00
Rose Glen Water Users	Schuler	Multi-purpose Dam	1957	200	150	6,884.00
Ross Creek	Irvine	Irrigation	1950	3,000	5,000	47,998.00
Ross Lake Community	Raymond	Stockwatering	1950	-	300	7,987.00
Rough Meadow Reservoir	Coronation	Irrigation	1951	200	-	2,471.00
Ruks	Pincher Creek	Irrigation & Dam	1954	900	250	6,484.00
Schuler Water Users	Schuler	Multi-purpose Res.	1957	-	5	5,443.00
Serviceberry Creek	near Drumheller	Irrigation	1949	1,200	500	17,518.00
Seven Persons	Seven Persons	Stockwatering Dam	1943	-	800	12,103.00
Severn Creek	Rosebud	Irrigation & Dam	1950	1,000	1,000	24,990.00
Sheerness Grazing (Blois)	Roselynn	Stockwatering	1953	-	12	3,797.00
Sheerness #2	Roselynn	Stockwatering	1954	-	50	2,190.00
Snake Creek	Calgary	Irrigation & Dam	1950	500	300	15,976.00
Spondin	Hanna	Dugout	1955	-	1.5	1,000.00
Spruce Coulee	Elkwater	Stockwatering Dam	1959	-	1,000	12,496.00
Starland, M.D. of	Morrin	Stockwatering	1956	-	45	3,196.00
Stehr Coulee	Walsh	Multi-purpose Res.	1956	-	26	4,570.00
Sounding Creek	Cereal	Irrigation	1949	8,000	5,600	51,988.00
South Macleod	Macleod	Irrigation	1948	6,000	-	82,614.00
Squaw Coulee	High River	Irrigation	1949	2,000	455	17,999.00
Sundial	Champion	Dugout	1959	-	6	3,102.00
Swalwell	Swalwell	Multi-purpose Res.	1957	280	300	9,463.00
Three Hills	Three Hills	Stockwatering	1948	-	120	19,652.00
Twin Lakes	Chancellor	Irrigation	1954	500	-	12,498.00
Twin River Grazing	Twin River	Stockwatering	1953	-	125	4,486.00
Two Lakes	Elkwater	Multi-purpose Res.	1958	1,500	1,900	14,378.00

Name of Project	Location	Type of Project	Completed	Irr. Ac.	Stor. Cap. Acre Feet	Costs
Vulcan Dam	Vulcan	Irrigation	1951	400	150	3,997.00
Vauxhall	Vauxhall	Stockwatering	1948	-	30	5,883.00
Waddington	Vale	Multi-purpose Res.	1957	-	12	2,904.00
Walsh Flats	Walsh	Irrigation	1953	2,100	25,000	4,700.00
Watts Flats	Watts	Flood Irrigation	1958	2,000	-	6,147.00
(Bull Pound-Lone Butte)	Rockyford	Irrigation	1952	-	-	4,744.00
Wheatacre #2	Rockyford	Irrigation	1950	1,600	1,500	12,976.00
Wheatacre Dam	Cressday	Irrigation	1936	3,600	4,500	24,370.00
Wild Horse Storage	Hussar	Irrigation	1950	1,000	500	9,993.00
Wintering Hills	Medicine Hat	Multi-purpose Res.	1957	420	500	14,403.00
Wisdom Water Users	Cardston	Irrigation	1955	400	-	3,593.00
Woolford Community Project	Milk River	Dugout	1959	-	6	8,291.00
Writing on Stone						
Yeast Reservoir	Thelma	Irrigation	1953	400	800	6,592.00

* - P.F.R.A. gave assistance to a project already in existence to improve storage capacities, canals and distribution systems.

APPENDIX V

CUMULATIVE STATEMENT

Development and Operation of Community Pastures under the
Prairie Farm Rehabilitation Act
1938 to March 31, 1960

Fiscal Year	No. of Pasture Units in Operation	Area of Land in Pastures (acres)	Total Cost of Construction of Pastures \$	Livestock Units Carried on Pastures	Acres per Unit of Livestock	Revenue \$	Operating Costs \$	Net Operating Cost per Unit of Livestock \$	Average Charge per Unit Livestock to Farmers \$
1938-39	14	189,800	165,995.03	3,231	58.7	6,339.92	10,185.52	3.15	1.96
1939-40	26	612,300	663,471.25	11,522	53.1	21,632.71	20,945.84	1.82	1.88
1940-41	35	884,500	1,004,305.91	23,245	38.1	43,451.56	35,291.05	1.52	1.87
1941-42	38	936,548	1,187,360.92	33,230	28.2	65,434.89	50,607.22	1.52	1.97
1942-43	45	1,261,100	1,129,487.54	51,127	24.7	98,292.32	79,906.76	1.56	1.92
1943-44	46	1,268,140	1,558,055.31	54,472	23.3	111,114.25	107,534.66	1.97	2.04
1944-45	49	1,337,320	1,699,012.21	59,997	22.3	151,461.08	117,064.90	1.95	2.52
1945-46	50	1,361,440	1,857,020.37	67,778	20.1	167,045.16	136,567.09	2.01	2.46
1946-47	53	1,412,860	2,072,274.21	68,493	20.6	198,115.27	145,292.51	2.12	2.89
1947-48	53	1,417,320	2,208,919.12	66,347	21.4	203,888.11	161,471.05	2.43	3.07
1948-49	54	1,436,480	2,486,277.28	71,393	20.1	204,012.40	175,666.27	2.46	2.86
1949-50	54	1,439,680	2,809,196.14	70,308	20.5	211,624.23	172,255.25	2.45	3.01
1950-51	56	1,521,080	3,237,330.55	68,858	22.1	221,129.45	217,867.15	3.16	3.21
1951-52	57	1,574,642	3,426,586.10	77,240	20.4	335,327.16	237,742.13	3.08	4.34
1952-53	59	1,652,020	3,754,098.41	94,137	17.5	438,513.75	373,737.36	3.97	4.66
1953-54	60	1,678,736	3,963,572.83	109,583	15.3	507,179.14	490,807.89	4.48	4.55
1954-55	60	1,696,900	4,273,916.79	106,322	15.9	496,805.78	466,153.69	4.38	4.66
1955-56	60	1,728,700	4,509,668.59	108,499	15.8	499,045.13	501,540.73	4.67	4.60
1956-57	61	1,759,570	4,832,863.47	117,441	14.9	548,601.01	508,002.83	4.33	4.67
1957-58	61	1,796,275	5,119,317.01	119,398	15.0	552,938.40	607,129.23	5.08	4.63
1958-59	62	1,815,265	5,509,958.43	117,032	15.5	542,606.90	686,448.88	5.87	4.64
1959-60	64	1,818,464	5,800,342.43	124,812	14.6	705,785.32	742,915.21	5.95	5.65
						6,330,343.94	6,045,133.22		

x - A livestock unit indicates one head of cattle, one horse, or five sheep.

A pasture unit may include one or more pastures, but it is operated under one management.

APPENDIX VI

P.F.R.A. COMMUNITY PASTURES IN OPERATION DURING THE FISCAL YEAR ENDED MARCH 31, 1960

Community Pasture & Headquarters	Total Area of Pasture Fenced (Acres)	Accumulated Cost of Construction March 31, 1959	Accumulated Cost of Construction March 31, 1960	1959-60 Stock Pastured	
				Cattle	Horses
SASKATCHEWAN					
Pasture Units					
Coalfields #4, North Portal	32,380	156,091.66	163,997.39	3197	49
Estevan-Cambria #5-6, Macoun	6,720	18,168.68	18,856.56	409	6
Masefield #17, Orkney	36,320	101,739.39	115,431.66	1657	-
Lone Tree #18, Bracken	33,600	96,446.71	96,816.71	2079	33
Battle Creek #20, Divide	66,880	131,504.61	165,363.82	2733	51
Nashlyn #21, Consul	61,520	87,867.36	92,704.07	2564	3
Govenlock #22, Govenlock	68,800	108,454.45	113,034.45	2116	10
Lomond #37, Pasture #1, Goodwater	23,360	81,082.37	86,149.83	2946	33
Lomond #37, Pasture #3, Maxim	18,400	77,448.68	83,139.62	1275	22
Laurier #38, Lomond #37 - #2, Radville	37,175	106,043.98	108,999.43	2666	80
The Gap #39, Ceylon	13,920	84,564.76	88,258.98	1260	50
Val Marie #47, Val Marie	110,000	267,268.77	276,438.53	7712	19
Beaver Valley #47A, Val Marie	57,680	25,810.86	25,810.86	625	-
Reno #51, Pasture #1, Robsart	17,120	61,733.54	63,533.54	1071	8
Reno #51, Pasture #2, Consul	11,360	29,234.38	29,877.83	671	-
Tecumseh #65, Forget	18,400	77,298.59	80,867.55	1526	25
Brokenshell #68, Pasture #1, Yellow Grass	22,720	95,390.20	101,634.48	1751	65
Brokenshell #68, Pasture #2, Weyburn	8,160	15,458.47	16,060.94	307	2
Excel #71, Ormiston	20,500	96,260.44)	71,620.87	1834	-
Key West #70, Kayville	10,240)	35,019.95	892	-
Auvergne-Wise Creek #76-77, Cadillac	42,880	140,328.90	140,908.90	3480	5
Wellington #97, Tyvan	25,360	111,148.25	112,798.36	1928	38
Caledonia-Elmsthorpe #99-100, Milestone	26,400	118,692.02	119,105.66	1403	59
Shamrock #134, Shamrock	26,080	86,319.76	87,126.19	1568	-
Swift Current-Webb #137-8, Swift Current	18,720	81,878.71	83,526.75	1825	-
Gull Lake #139, Tompkins	10,720	32,362.21	32,362.21	651	-
Big Stick #141, Maple Creek	18,160	44,197.75	45,456.24	1464	-
Bitter Lake #142, Maple Creek	47,410	119,809.80	124,616.36	2980	-

Community Pasture & Headquarters	Total Area of Pasture Fenced (Acres)	Accumulated Cost of Construction March 31, 1959	Accumulated Cost of Construction March 31, 1960	1959-60	
				Cattle	Stock Pastured Horses Sheep
SASKATCHEWAN - (Cont'd.)					
Pasture Units					
Spy Hill # 152, Welby (operated in con- junction with Ellice, Man.)	19,570	55,322.52	58,080.61	2504	37
Elbow # 223-4, Elbow	30,080	80,810.89	80,810.89	1929	73
Beaver Hills # 245-6, Homefield P.O.	44,160	118,069.01	139,106.59	4443	197
Willner # 253, Davidson	13,280	81,709.05	83,951.32	1639	-
Coteau # 255, Birsay	27,520	64,191.82	64,191.82	1610	19
Monet # 257, Elrose	46,840	111,548.24	111,548.24	2814	37
Fairview # 258, Chipperfield	17,000	115,260.23	120,035.08	1234	-
Newcombe # 260, Glidden	52,960	167,020.63	174,521.22	4044	27
Mantario # 262, Empress, Alta.	24,960	70,406.80	75,479.98	1985	-
Cote, Togo	10,080	41,609.23	72,036.12	944	2
Mount Hope-Prairie Rose # 279-309	31,540	98,440.84	108,690.49	1810	-
Wreford # 280, Hatfield	13,440	81,055.40	81,953.33	1101	-
McCraney # 282, Davidson	10,720	69,677.74	69,677.74	1307	-
Rudy-Rosedale # 284-3, Broderick	19,200	90,057.21	90,182.57	1554	48
Hillsburgh # 289, Brock	13,600	56,439.48	56,700.27	944	-
Eagle Lake # 289-319, Netherhill	23,249	91,445.69	91,923.67	1219	6
Kindersley-Elma # 290-1, Smiley	21,400	112,394.62	116,329.00	1655	26
Usborne # 310, Venn	12,680	46,018.57	57,171.79	1495	-
Dundurn # 314, Dundurn	44,840	113,477.54	113,796.29	2372	620
Montrose # 315, Donovan	21,600	67,005.91	78,176.02	1103	-
Oakdale # 320, Beaufield	20,800	62,470.08	64,738.08	1429	17
Antelope Park # 322, Hoosier	34,320	106,910.60	111,225.88	2848	48
Wolverine # 340, Plunkett	17,280	73,320.05	73,594.20	1940	-
Mariposa # 350, Kerrobert	26,880	93,370.29	95,256.40	1793	-
Progress # 351, Kerrobert	19,680	65,149.48	66,968.47	1507	-
Heart's Hill # 352, Compeer, Alta.	15,100	58,931.77	60,927.33	1719	-
Park # 375, Langham	7,040	22,633.89	22,633.89	411	-
Battle River-Cutknife # 438-9, Gallivan	30,480	86,009.64	91,481.39	1179	35

Community Pasture & Headquarters	Total Area of Pasture Fenced (Acres)	Accumulated Cost of Construction March 31, 1959	Accumulated Cost of Construction March 31, 1960	1959-60 Stock Pastured Cattle Horses Sheep
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Pasture Units

SASKATCHEWAN - (Cont'd.)

Royal #465, Marcelin	65,120	213,512.64	228,106.43	3092 69
Paynton #470, Paynton	24,480	79,542.32	84,987.55	1426 25
Totals for Saskatchewan	1,650,884	5,046,437.48	5,323,800.40	109,640 1,224 620

Special Project - Bitter Lake Irrigation included in Bitter Lake Pasture

Pasture Units

MANITOBA

Ellice Pasture, Welby, Sask. (operated in
conjunction with Spy Hill #152)

Archie Pasture, Welwyn, Sask.	20,320	28,746.37	28,746.37	- 16 2300
Portage Pasture, Poplar Point	39,740	92,093.20	95,100.33	2282 40
Woodlands Pasture, Poplar Point	14,640	44,793.85	44,793.85	2336 85
Lakeview Pasture, Langruth	20,960	69,793.13	70,180.39	2838 7
Westbourne Pasture, Gladstone	29,280	80,724.71	81,122.96	2091 13
Langford Pasture, Neepawa	11,520	42,592.62	49,247.79	1773 23
San Clara	19,680	71,097.44	73,670.71	1860 -
Wallace Pasture, Elkhorn	8,160	33,679.63	33,679.63	-
	3,280	(Operated by R.M. Wallace)		

Totals for Manitoba

	167,580	463,520.95	476,542.03	13,180 184 2300
GRAND TOTALS	1,818,464	5,509,958.43	5,800,342.43	122,820 1,408 2920

APPENDIX VII

MAJOR PROJECTS - IRRIGATION, RECLAMATION AND WATER STORAGE

(Projects by Special Votes of Parliament, Administered by P.F.R.A., to March 31, 1960)

Name of Project	Location	Type of Project	Completed	Irr. Ac.	Stor. Cap. Acre Feet	Costs
MANITOBA						
Assiniboine River Diking & Cut Off	Brandon	River Control	Incomplete	-	-	1,018,423.00
North-West Escarpment Reclamation Proj.-Riding Mt. Area	Dauphin	Watershed Control	Incomplete	-	-	1,024,363.00
Saskatchewan River Reclamation - Pasquia Area	The Pas	Reclamation	Incomplete	135,000	-	2,193,777.00
ALBERTA						
Bow River	Medicine Hat	Irrigation	Incomplete	235,000	408,862	54,398.00
(a) Purchase of Canada Land & Irrigation Company						2,353,182.00
(b) Development & Construction						20,915,630.00
St. Mary	Lethbridge	Irrigation	Incomplete	510,000	320,000	14,061,084.00
Belly River Diversion	Lethbridge	Irrigation	1950	-	-	53,901.00
BRITISH COLUMBIA						
Cawston Benches	Keremeos	Irrigation (pump)	1951	629	2,000	185,491.00
Chase & Johnston - Western Canada Ranching	Kamloops	Irrigation	1951	755	-	98,243.00
Western Canada Ranching #2	Kamloops	Irrigation (pump)	1950	54	-	58,069.00
Lillooet - Pemberton	Pemberton	River Control	1953	-	-	1,056,539.00
South Thompson - Niskonlith Gravity Project	Kamloops	Irrigation	Incomplete	1,030	1,200	12,282.00
Westbank Project	Kelowna	Irrigation	1950	1,200	2,500	537,450.00
Bankhead Irrigation Project	Kelowna	Irrigation	1951	92	-	32,229.00
Penticton West Bench	Penticton	Irrigation (pump)	1953	800	-	66,362.00
B.C. Fruitlands	Kamloops	Irrigation	Incomplete	2,000	-	200,000.00

(Above includes ONLY Construction Costs)

Name of Project	Location	Type of Project	Completed	Irr. Ac.	Stor. Cap. Acre Feet	Costs
SASKATCHEWAN						
South Saskatchewan River Project	Outlook	Multi-purpose	Incomplete	500,000 (Including 24,000 in Qu'Appelle extension)	-	6,373,658.00

(Above includes ONLY Construction Costs)

MANITOBA

Name of Project	Location	Type of Project	Completed	Irr. Ac.	Stor. Cap. Acre Feet	Costs
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APPENDIX VIII
PRAIRIE FARM REHABILITATION ACT - EXPENDITURES BY ACTIVITIES
April 1, 1935 - March 31, 1960

	1935-1959	1959-1960	Total
ADMINISTRATION			
Ottawa Administration	371,716	32,345	404,061
Regina Administration	1,644,984	174,480	1,819,464
Total	<u>2,016,700</u>	<u>206,825</u>	<u>2,223,525</u>
EQUIPMENT			
Purchase of Equipment	1,677,192	212,421	1,889,613
Upkeep of Equipment	1,107,474	95,942	1,203,416
Equipment Depot	2,526,691	315,630	2,842,321
Total	<u>5,311,357</u>	<u>623,993</u>	<u>5,935,350</u>
LAND UTILIZATION			
Supervision	735,155	47,246	782,401
Construction of Community Pastures	7,963,060	548,496	8,511,556
Pasture Improvements	563,023	82,935	645,958
Operation of Community Pastures	5,772,018	781,359	6,553,377
Purchase of Bulls	691,505	69,720	761,225
Re-establishment of Farmers	-	-	-
Grass Seeding & Experimental Regrassing	738,927	17,623	756,550
Total	<u>16,463,688</u>	<u>1,547,379</u>	<u>18,011,067</u>
WATER DEVELOPMENT			
Supervision	824,831	21,234	846,065
Small Projects including Engineering	17,879,944	1,471,771	19,351,715
Large Irrigation and Storage Projects			
Supervision	1,930,578	79,554	2,010,132
Construction and Improvements	9,175,902	719,561	9,895,463
Maintenance and Operation	6,557,544	275,882	6,833,426
Re-establishment of Farmers	222,537	5,304	227,841
Surveys and Explorations	1,660,484	-	1,660,484
Purchase of Land	764,544	1,714	766,258
Total	<u>39,016,374</u>	<u>2,575,020</u>	<u>41,591,384</u>
Cultural work for soil drifting control and related problems prior to April 1, 1946 (under administration of Experimental Farms Service).	4,966,394	-	4,966,394
GRAND TOTAL	<u>67,774,503</u>	<u>4,953,217</u>	<u>72,727,720</u>

SPECIAL VOTES UNDER P.F.R.A. ADMINISTRATION

	1935-1959	1959-1960	Total
Assiniboine and Qu'Appelle Rivers, Surveys and Construction	1,146,684	34,869	1,181,553
Lillooet Project B.C. Construction and Exploration	1,170,133	-	1,170,133
Land Reclamation & Development in B.C.	2,115,810	24,239	2,140,049
St. Mary Irrigation Project - Alberta	20,209,414	748,123	20,957,537
Bow River Project - Alberta	27,056,781	1,184,095	28,240,876
Red Deer River Project - Alberta	1,047,061	20,668	1,067,729
Eastern Irrigation District - Alberta	-	35,793	35,793
Rivers Dam - Manitoba	444,436	522,975	967,411
Other Miscellaneous Projects - Construction	210,392	-	210,392
Soil Mechanics Building	103,769	370,442	474,211
Land Protection & Reclamation - Manitoba	3,118,144	128,771	3,246,915
South Saskatchewan River Project - Saskatchewan (o&g)	5,897,340	6,615,070	12,512,410
Buffalo Pound Project - Saskatchewan	1,818,174	133,100	1,951,274
Surveys and Engineering Costs	12,229,132	1,813,271	14,042,403
GRAND TOTAL	76,567,270	11,631,416	88,198,686

- (a) Included in Cultural Administration to March 31, 1938.
- (b) Included in Water Development Administration to March 31, 1938.
- (c) Includes \$388,923.57 expended under the Supplementary Public Works Construction Act, 1935.
- (d) Includes \$95,198.65 expended on St. Mary River Project (administration) in 1946-47.
- (e) Includes \$300,879.29 expended on St. Mary River Project (construction) in 1946-47.
- (f) Includes \$147,530.22 expended on St. Mary River Project (administration) in 1947-48.
- (g) The amounts shown include Red Deer \$325,642 and South Saskatchewan \$370,093 provided by Department of Reconstruction. In addition, the following amounts were paid from P.F.R.A. Vote: South Saskatchewan - \$59,568; Red Deer - \$33,207.
- (h) General Survey charges now being paid from other P.F.R.A. Votes.
- (i) Amounts shown in Notes (d), (e) and (f) to be added to this total.
- (j) Veteran's Land Act expenditure not included.
- (k) Expenditures until 1949-50 included under Land Utilization and Water Development.
- (l) Previously under P.F.R.A. Vote (see item (g)).
- (m) Re-establishment of farmers now under Water Development.
- (n) Previously under Land Utilization (see item (m)).
- (o) Includes expenditures for Surveys, Investigations, Explorations, Drilling etc., prior to Construction period in an amount of \$4,393,439. This expenditure figure also includes \$124,985, contributed by the Province of Saskatchewan under the terms of the Share Agreement.

APPENDIX IX
EXPENDITURES BY PROVINCES
Prairie Farm Rehabilitation Act and Special Votes under its Administration
April 1, 1935 - March 31, 1960

	<u>Manitoba</u>	<u>Saskatchewan</u>	<u>Alberta</u>	<u>British Columbia</u>
P.F.R.A.	6,097,938	53,379,045	8,482,901	
Major Irrigation and Reclamation in the Prairie Provinces	992,361	15,033,598	50,042,613	
Land Reclamation, Construction and Development in B.C.				3,309,726
Land Protection and Reclamation	3,246,915			
Assiniboine and Qu'Appelle Rivers	1,085,029	96,524		
Surveys and Engineering Costs	2,227,281	7,611,591	4,398,186	154,864
Administration	<u>378,797</u>	<u>2,340,849</u>	<u>1,913,253</u>	<u>134,935</u>
	<u>14,028,321</u>	<u>78,461,607</u>	<u>64,836,953</u>	<u>3,599,525</u>
				<u>160,926,406</u>

REVENUE

Revenue Received from Projects under P.F.R.A. Office
to March 31, 1960

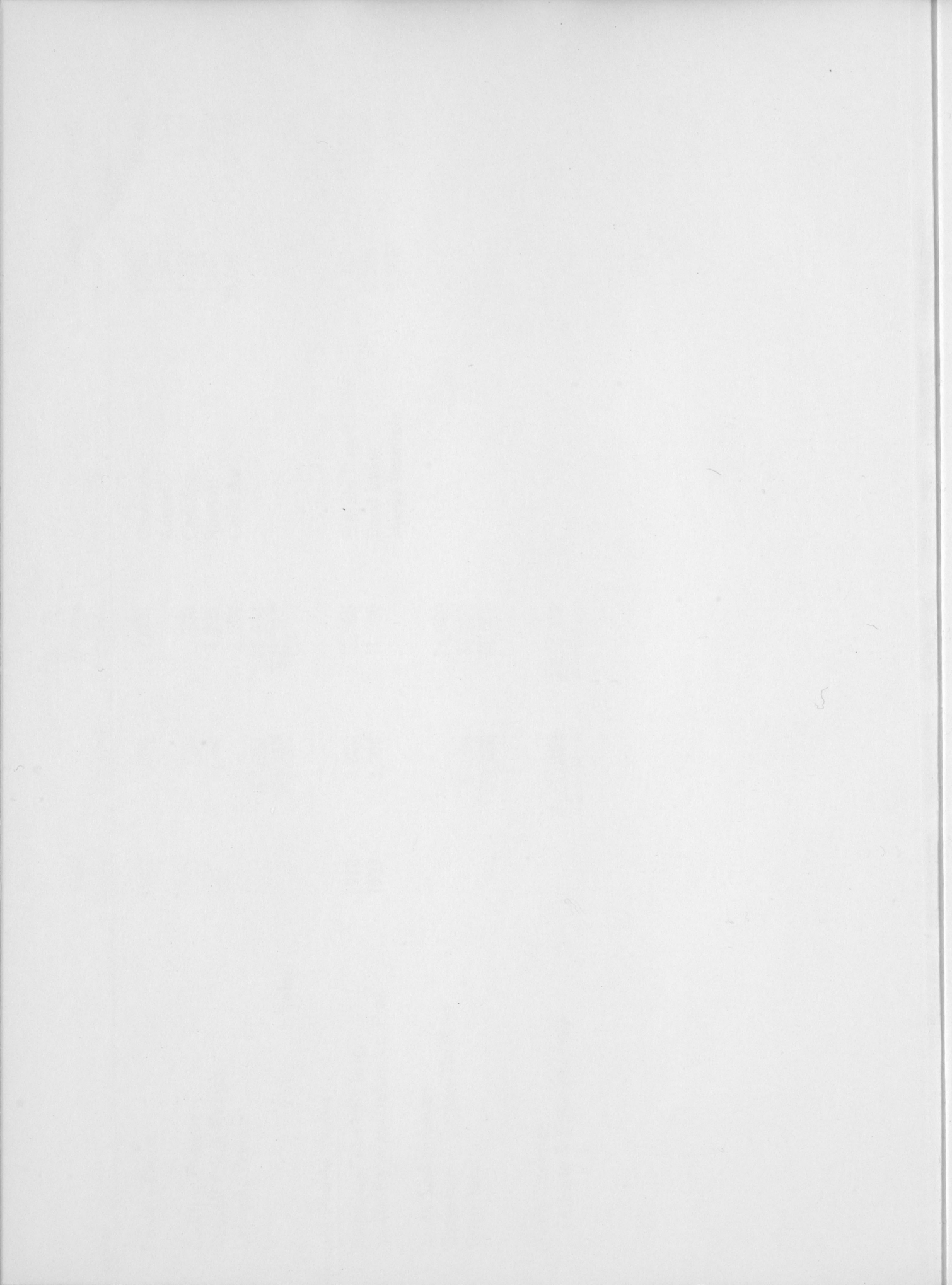
Pasture Operation and General Revenue	6,741,548
Irrigation Project Operation (Under P.F.R.A. Vote)	727,670
Irrigation and General Revenue (Major Projects Vote)	<u>2,474,338</u>
TOTAL	<u>9,943,556</u>

APPENDIX X TOTAL IRRIGATION DEVELOPMENT - ALBERTA AND SASKATCHEWAN

Project	Year Started	Irrigable Acreage		Major Reservoirs	(Live Storage (Acre Feet))	
		Present	Ultimate Proposals		Present	Ultimate
<u>Mountain & Foothill Region</u>						
United Irrigation District	1921	34,000	34,000	Driggs Lake	7,500	7,500
Mountain View Irrig. District	1925	3,700	3,700			
Leavitt Irrigation District	1943	4,600	4,600			
Aetna Irrigation District	1943	8,300	8,300			
Macleod Irrigation District	1948	3,000	3,500			
Other		12,300	32,700			
		<u>65,900</u>	<u>86,800</u>			
Total						
<u>Western Prairie Region</u>						
St. Mary-Milk River Project	1901	318,200	510,000	St. Mary Reservoir	270,000	270,000
				Chin	165,000	165,000
				Jensen	14,000	14,000
				Ridge	80,000	80,000
				Taber	4,500	4,500
				Fincastle	2,400	2,400
				Horsefly	6,789	6,789
				Grassy Lake	12,000	12,000
				Rattlesnake	4,660	4,660
				Murray	24,830	24,830
				Seven Persons	980	980
				Verdigris	-	110,000
				Waterton	-	130,000
Bow River Irrigation Project	1918	131,000	240,000	Lake McGregor	150,000	250,000
				Travers	100,000	100,000
				Little Bow	12,000	12,000
Western Irrigation District	1908	50,000	50,000	Chestermere	3,000	3,000

Project	Year Started	Irrigable Acreage		Major Reservoirs	(Live Storage (Acre Feet))	
		Present	Ultimate Proposals		Present	Ultimate
Eastern Irrigation District	1914	250,000	281,000	Lake Newell Rock Lake	90,000 11,000	100,000 11,000
Lethbridge Northern Irrig. District	1922	96,100	96,100	Crawling Valley	-	120,000
Berry Creek Project	1938	3,000	8,000	Keho	40,000	40,000
Red Deer River Diversion Proj. (Wm. Pearce Project)	-	-	250,000	Berry Creek Res.	14,500	14,500
Other		52,000	201,000			
		<u>900,300</u>	<u>1,636,100</u>			
Total						
Central Prairie Region						
French Flats-Valley Park	1949	830	6,000			
South Sask. Irrig. Project		-	470,000	South Sask. Delisle	-	2,750,000
				Blackstrap	-	25,000
Other		13,300	14,000			
		<u>14,130</u>	<u>490,000</u>			
Total						
Cypress Hills Region						
Eastend-Val Marie Irrig. Proj.	1937	10,000	13,000	Cypress Lake Eastend Val Marie West Val Marie Fifty Mile	80,000 1,600 12,000 4,000 -	100,000 2,000 12,000 4,000 80,000
Consul-Vidora Irrig. Proj.	1945	5,000	10,000			
Ross Creek Irrig.	1949	2,000	3,000	Gros Ventre	4,500	8,000
Maple Creek Irrig.	1936	10,000	10,000	Downie Lake Junction Harris	10,000 8,400 5,000	10,000 10,000 5,000
Swift Current Irrig. Project	1940	5,962	11,457	Duncan Highfield	85,000 13,000	85,000 13,000

Project	Year Started	Irrigable Acreage		Major Reservoirs	(Live Storage (Acre Feet))	
		Present	Ultimate Proposals		Present	Ultimate
Ponteix Project	1953	1,000	7,000	Gouverneur	6,000	10,000
Cadillac Project	1953	500	800	Admiral	1,000	2,500
Russell Creek Project	1951	1,000	1,200	Cadillac	1,350	1,500
Lafleche Project	-	-	8,000	Russell	1,500	2,000
Other		67,300	98,000	Lafleche	30,000	30,000
		<u>102,762</u>	<u>162,457</u>			
Total						
Eastern Prairie Region						
Lumsden-Fairy Hill Irrig.	1910	8,000	12,000	Buffalo Pound Lake	55,000	130,000
Souris-Estevan-Kisbey Irr. Proj.	1937	5,000	11,000	Dead Lake	3,000	50,000
				Moose Mountain	8,200	8,200
South Saskatchewan			24,000			
Extension - Qu'Appelle River		20,000	34,000			
Other total		<u>33,000</u>	<u>81,000</u>			
Total Irrigation		1,116,092	2,456,357			
(Alberta & Saskatchewan)						



Date Due

CIRC MAR 17 '78

MAR 10 RETURN

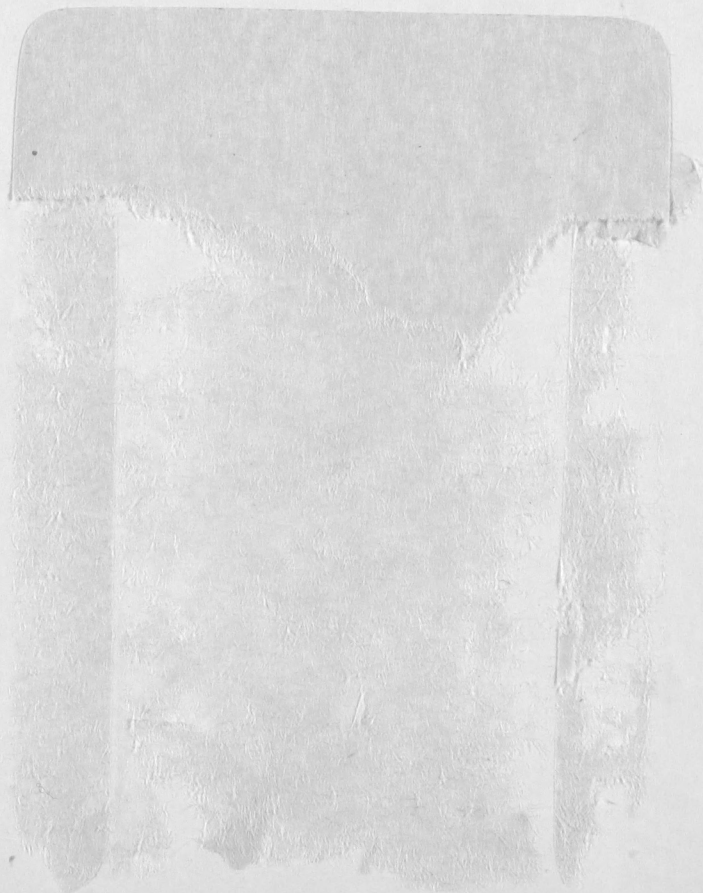
DUE CAM MAR 19 '90

MAR 19 RETURN

HD 1781 A2 P8222 1959/1960
CANADA PRAIRIE FARM
REHABILITATION ADMINISTRATION
PRAIRIE FARM REHABILITATION
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OTTAWA, 1961